The frequency and quality of language use by early childhood teachers with four-year-old children during a shared play activity

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by

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Abstract

The language input that children receive in their early years is predictive of future academic development. In New Zealand, nearly all four-year-old children spend a large portion of their time in early childhood education (ECE) settings. Research has identified a range of ways in which adult language input can be defined and measured, with respect to ascertaining its impact on children's language development. The current study aimed to create a protocol which would allow both functional and linguistic aspects of teacher-child language interactions to be assessed. Data collection required the 10 participating ECE teachers to video-record three 10-minute interactions of themselves engaging in a shared play activity with a single child. Interactions were recorded using a small device which collected both audio and video data and did not require the presence of the researcher. Teachers were given a set of toy animals and were instructed to use these in a play activity with the participating child. No other instructions were given. These videos were then transcribed by the researcher and coded with two different coding schemes. The first, the Systematic Analysis of Language Transcripts (SALT) software was utilised to capture linguistic elements of the talk. The second, the Modified Hart and Risley Scheme (MHRS) was developed to capture the functional aspects of the talk. Findings indicated that each coding scheme captured distinct components of the interactions, suggesting that benefit can be gained from utilising both methods in order to achieve a more accurate understanding of the varying interactional complexities. Analysis revealed large variations in the linguistic and functional properties of the teacher language. Given the recent update of Te Whāriki, in which adults are encouraged to be more intentional in their practice, it is timely to note that teachers would likely benefit from targeted professional development on how best to facilitate language development. Such professional development would ensure that teachers

know how to provide high quality language input for children and are able to identify children who need extra support.

Chapter 1

Introduction and Literature Review

The Importance of Language Experience

Language has been referred to as 'the currency of education' as it provides the basis for developing the higher order cognitive skills and social skills which are needed for achievement (Cocking & Mestre, 1988; Golinkoff, Hoff, Rowe, Tamis-LeMonda, & Hirsh-Pasek, 2018). Goldin-Meadow et al. (2014) argue that "language opens doors" (p. 589) and that the timing of these doors opening has implications for subsequent development. Language is the means by which other skills, such as reading and subsequent academic attainment, are developed (Burger, 2015). The influence of language exposure is not limited to the development of literacy skills, it also influences the development of executive functioning and social skills (Grifenhagen, Barnes, Collins, & Dickinson, 2017). The quantity and quality of language exposure is also related to levels of neurological activation in Broca's area which is one of the areas of the brain directly associated with language (Romeo et al., 2018). Given the plasticity of the brain during the early years, this is a particularly pertinent finding.

Language development in preschool children is especially important, given that educational outcomes at adolescence can be related back to academic skills, specifically language and literacy, at school entry (Cunningham & Stanovich, 1997). Children who enter school with a limited vocabulary have difficulty assigning meaning to unknown words, and this in turn can slow the development of their reading skills (Ricketts, Bishop, & Nation, 2008). Vocabulary skill level at school entry has been shown to be associated with adult literacy, as well as mental health and employability at 34 years of age (Law, Rush, Schoon, & Parsons, 2009).

Research on reading comprehension asserts the importance of language as a precursor to developing reading and writing skills (Whitehurst & Lonigan, 1998). The process of acquiring reading ability is referred to as "a developmental continuum where language and literacy grow simultaneously and grow on each other" (Johanson, Justice, & Logan, 2016, p. 95; Whitehurst & Lonigan, 1998). The National Early Literacy Panel (NELP) report assessed the relationship between oral language and later literacy achievement. Results identified moderate to strong predictive relations between oral language variables and conventional literacy skills (Shanahan & Lonigan, 2010).

Language ability, self-regulation, and social skills all contribute to the formation of positive relationships via reduced problem behaviour and increased prosocial and academic functioning (Duncan et al., 2007). Children who have difficulty communicating their ideas are less able to effectively sustain or implement play with other children (Gertner, Rice, & Hadley, 1994). Peers are an important part of children's developing socialisation skills. If children struggle to have positive interactions with peers then they are less likely to be exposed to opportunities for learning and practising language skills, role modelling, and the provision of natural consequences (McCabe & Meller, 2004; Windsor, 1995).

Longitudinal Implications and the Matthew Effect

Language development has important implications for later outcomes. The cumulative advantage phenomenon by which those with more experience learn more quickly than those with less, thereby increasing the gap between the disadvantaged and the advantaged, is commonly referred to as the Matthew Effect (Stanovich, 1986). This 'rich get richer' phenomenon is visible from an early age and is unlikely to change without significant early intervention. The growing number of children who experience early disadvantages in language creates a kind of "educational inertia that is immensely difficult for early schooling to address" (Pondoscio, 2014, p. 4). Providing intensive support for language and literacy

skills in early childhood could alter children's language development trajectory. However the level of support preschool teachers typically provide is often not sufficient to close this gap (Cabell, Justice, Logan, & Konold, 2013). Dickinson and Porche (2011) found that children who did not meet grade level reading requirements at Grade 3 were four times more likely to drop out of high school than those who did meet grade requirements.

Numerous longitudinal studies of language development have shown that children who receive low language input in the early years experience poorer long-term outcomes. A New Zealand longitudinal study by Suggate, Schaughency, McAnally, and Reese (2018) found a positive correlation between vocabulary development in the early years and reading ability in adolescence. Notably, there was a significant correlation between vocabulary at 19-months and reading comprehension at 16-years. The Progress in International Reading Literacy Study (PIRLS) collects assessments of reading and literacy skills of Year 5 students every five years. The fourth cycle of PIRLS occurred in late 2015 and included just over 50 other countries. Although the mean reading score of New Zealand students (523) was significantly higher than the 'PIRLS Scale Centrepoint' (500), this current mean score is lower than all previous PIRLS measures of New Zealand children (Ministry of Education, 2017a). This distribution indicates that there have been no changes in the reading and literacy skills displayed by Year 5 children since the PIRLS began in 2001. In comparison to other English-speaking countries, New Zealand students displayed the second widest distribution of scores (300 points) (Ministry of Education, 2017a). This illustrates a significant disparity between good and poor readers in their fifth year of schooling. This disparity likely stems from the similar disparity demonstrated in the children's early literacy knowledge at school entry, which the literature shows is related to early vocabulary knowledge (Tunmer et al., 2008).

The Early Language in Victoria Study (ELVS) found that low language skills evident when children were aged seven years, were correlated with poor outcomes including social-emotional difficulties, behavioural difficulties and literacy delays (McKean et al., 2017). Analyses revealed that children with delayed language development were two to three times more likely to experience social-emotional and behavioural difficulties than those with typically developing language (McKean et al., 2017). Similarly, the Longitudinal Study of Australian Children (LSAC) revealed that the vocabulary gap between children with and without socio-economic area disadvantage at eight years of age was equivalent to eight months of receptive vocabulary growth (Taylor, Christensen, Lawrence, Mitrou, & Zubrick, 2013).

Children with delayed language development are likely to have difficulty both in forming and maintaining relationships, and in understanding and participating in interactions with their teachers and their peers (Dickinson & McCabe, 1991; Park et al., 2005). This gap is exacerbated by children's lack of appropriate social skills, which limits their opportunities to practise language through socialising with peers (Rice, 1993). These children may lack pragmatic awareness and are more likely to be labelled as learning disabled, to experience bullying and poor school performance, and to develop a negative self-image (Noel, Peterson, & Jesso, 2008; Roth, 1986).

During the 1960s, Hart and Risley (1995) conducted foundational research in the home environments of 42 families from Kansas. This study provided evidence of a significant disparity in the quantity and quality of language that children are exposed to. They carried out a longitudinal study in which trained observers took one-hour audio recordings of family interactions each month for two and a half years. Recordings started when the children were seven months old and continued until they were 36 months old. Hart and Risley categorised the families as; 'professional', 'working class', or 'welfare'. One aspect of the comprehensive

analysis completed by Hart and Risley was the number of utterances, number of total words and number of different words that were spoken to a child. Hart and Risley (1995) also analysed the 'discourse functions' of parental utterances by categorising parent utterances in terms of the responses which they prompted. Three categories of discourse function were used; statements, demands, and questions. *Statements* referred to utterances containing a verb which served to 'assert without requiring a response' (p.103), *demands* were utterances which prompted the child to act without requiring a verbal response, and *questions* were coded as either 'wh- questions', 'yes/no questions', or 'other questions'. These subcategories for questions were created as different types of questions will elicit different kinds of responses. Hart and Risley also coded the valence or emotional tone of the utterances. The valence of an utterance was coded as affirmative to describe explicit parent approval, and as a prohibition if it was involved with explicit parent disapproval. Adjacency conditions were developed to describe the place of an utterance within an interaction; initiations, responses, or floor-holding. The first utterance in a conversation was referred to as an initiation with subsequent utterances by either speaker coded as responses. Floor-holding referred to an adult's response to their own utterance.

Hart & Risley (1995) reported striking differences in the way in which parents from different socio-economic groups engaged with their children. Parents from 'professional' families used nearly twice as many affirmatives than those in the 'working-class' families, and five times as many as those in the 'welfare' families. Additionally, 'welfare' families were reported to use half as many affirmatives as they did prohibitives. The use of prohibitives in the 'welfare' families was reported to be 20% more than in the 'professional' families (Hart & Risley, 1995). Initial analyses of the data collected by Hart and Risley (1995) revealed that between the ages of 11 and 18 months, children had an average of 325 utterances addressed to them per hour. This ranged from as many as 793 utterances per hour

to as few as 56. At 36-months of age the children from the professional families had experienced an average of 2,100 words spoken to them each hour, whereas for those in working-class and welfare families, children had experienced averages of 1,200 and 600 words spoken to them per hour, respectively (Hart & Risley, 1995). These differences in language exposure have been shown to have significant implications for vocabulary growth. Children with larger vocabularies learn new words more quickly because the ability to understand and remember new words is based on the presence of known words (Hart, 2004).

What is Language?

Language consists of a number of different components. A commonly used model to describe the key components of language is that of Bloom and Lahey (1978). They described language as "consisting of some aspect of content or meaning that is coded or represented by linguistic form for some purpose or use in a particular context" (p. 11). They identified three central dimensions of language: form, content, and use. These dimensions begin as separate components of development in the first 12 months and become progressively intertwined during the second year of life as language development begins.

Language Form: Three aspects of language form are usually distinguished. These are phonology, morphology, and syntax (Bloom & Lahey, 1978). Phonology refers to the units of sound, morphology refers to units of meaning that are words or inflections, and syntax refers to the ways units of meaning are combined with one another. Syntax and morphology, the study of word sequence and word structure respectively, are often referred to conjointly as 'grammar' (Barrett, 2016; Lyons, 1968).

Language Content: The content of language refers to its semantic properties (Bloom & Lahey, 1978). Semantics refers to the meaning associated with words, that is, the concepts and ideas encoded within the words. Semantic complexity ranges from contextualised language which is less cognitively challenging, literal, or immediate, to decontextualised

language which is more cognitively challenging, inferential, or non-immediate (Massey, 2013; Massey, Pence, Justice, & Bowles, 2008).

Contextualised language is characterised by a focus on concrete aspects of the environment such as locating, noticing, labelling, and describing objects in the immediate environment. Decontextualised language is characterised by a greater level of abstraction. It requires children to think beyond the 'here and now'. When adults use decontexualised language, children are required to use skills such as summarizing, inferring, judging, reasoning, predicting, problem solving, or explaining (Massey, 2013). Use of decontextualised language requires a larger and more diverse vocabulary and the use of more complex forms (Rowe, 2013). Its development is a significant predictor of children's later narrative skills and vocabulary knowledge (Uccelli, Demir-Lira, Rowe, Levine, & Goldin-Meadow, 2018).

Language Use: There are two key aspects of language use; the function or goal of the language, and the influence of the context on the understanding of language (Bloom & Lahey, 1978).

The functional aspect of language can either serve to achieve a personal goal (not involving other people) or to achieve a socially mediated goal. Socially mediated goals are the basis for the function of all interpersonal interactions. The social function of language is referred to as its *pragmatic function* (Lahey, 1988). The purpose of the interaction influences the amount and kind of language used during the interaction (Hart & Risley, 1999). For example, language used to direct behaviour is likely to consist of fewer words and does not tend to elicit conversation from a child. Conversely, language used to praise or encourage a child is more likely to elicit a response and offer future responding opportunities.

The influence of context can be either non-linguistic or linguistic. Non-linguistic influences refer to the ability to navigate a social exchange, either by initiating, maintaining,

or ending it (Lahey, 1988). Linguistic influences refer to the contingent nature of the interaction, that is, whether one speaker's utterance is related to what the previous speaker has said. Conversations are likely to be maintained when the child and the adult are engaged in a period of joint attention, characterised by mutual engagement in a topic. This occurs when adults engage with children in a manner that is sensitive and responsive to both a child's communicative attempts and their individual cues or needs (Girolametto & Weitzman, 2002). Multi-turn conversations on a single topic are associated with an increased likelihood of decontexualised talk and the use of more sophisticated vocabulary (Dickinson & Tabors, 2001; Dickinson & Porche, 2011; Peterson, Jesso, & McCabe, 1999) whereas rapid changing between topics is negatively correlated with language skills (McCabe & Peterson, 1991). During the first years of life, time spent in periods of joint attention has been shown to be predictive of various aspects of language development including receptive language (Hann, Osofsky, & Culp, 1996), expressive language (Beals & DeTemple, 1993; Hart & Risley, 1995), phonological awareness (Silvén, Niemi, & Voeten, 2002), and story comprehension (Beals & DeTemple, 1993). Farrant and Zubrick (2013) report that children who engaged in fewer episodes of joint attention with their parents at nine months of age were significantly more likely to have poorer receptive vocabulary at 58 months.

As briefly outlined above, there are many aspects of language learning which contribute to its development. However, out of all these domains, vocabulary is arguably the most sensitive to input and children's experiences (Hoff, 2006). This thesis focuses on variation in language input and its effects on language development and future learning.

Early Childhood Education

Classroom experiences directly impact child development and the interactions between teachers and children are a primary mechanism through which this occurs (Pianta & Stuhlman, 2004). Assessment of early childhood education (ECE) quality does not always

take into account the language interactions between teachers and children. Quality in ECE can be defined as "the essential components of early childhood environments that are valued in our society, and which support the well-being, development and rights of children, and support effective family functioning" (Smith et al., 2000, p. 48). The degree to which this is achieved is largely dependent on the nature of the interactions between teachers and children, or the 'process quality' of the centre, which, in turn is affected by the 'structural quality' of the centre. These two features have the potential to enhance the learning outcomes and overall development of the child (Taguma, Litjens, & Makowiecki, 2012)

Process quality refers to the direct experiences children have with people and objects in their ECE setting. It includes the social, emotional, physical and instructional aspects of their interaction with teachers and peers (Howes et al., 2008; OECD, 2018; Pianta et al., 2005). Relationships in settings with high process quality are reciprocal, responsive, and engaging. The adults in these settings support children's learning and exploration, and affirm their culture, language and identity (Mitchell, Wylie, & Carr, 2008).

Structural quality refers to more distal features which do not directly involve interactions between the teacher and the child. Three commonly used indicators of structural quality are child to teacher ratio, teacher qualification, and class size (Howes et al., 2008). Environments with a lower child to teacher ratio tend to exhibit higher levels of process quality indicators (Phillipsen, Burchinal, Howes, & Cryer, 1997).

Evidence supporting the relationship between teacher experience (a structural quality indicator) and the quality of teacher-child interactions (a process quality indicator) is inconsistent in settings with children between three and six years of age. According to Kuger, Kluczniok, Kaplan, and Rossbach (2016) some studies have found that teachers with more work experience have higher quality interactions with children (LoCasale-Crouch et al., 2007). However, others have found the opposite (Connor, Son, Hindman, & Morrison, 2005),

and yet others have not found any relationship (Pianta et al., 2005). One aspect of structural quality that has been found to be a consistent predictor of quality teacher-child interactions is participation in in-service training or professional development. This participation has been found to be a stronger predictor than pre-service qualifications and has also been shown to have direct links to child learning and development (OECD, 2018).

Quality in ECE is usually assessed via environmental rating scales such as the Early Childhood Environment Rating Scale (ECERS) (Harms, Clifford, & Cryer, 1998) or the Classroom Assessment Scoring System (CLASS) (Mashburn et al., 2008). These scales include a small focus on language but do not provide an in-depth picture of the nature of the teacher-child interactions. In New Zealand, ECE quality is reviewed externally by the Education Review Office (ERO). The Minister of Education, Hon Chris Hipkins, noted in a cabinet paper that "we currently lack an agreed clear definition of quality in early learning, or a means to measure it" (Hipkins, 2018, p. 4).

For the purposes of the current study, the following sections review how language function is defined and assessed, and how the linguistic properties of language are defined and assessed.

Assessing Teacher-Child Language Interactions

Assessment of teacher language in ECE is often obtained through video observations which are later transcribed and analysed. This method is referred to as spontaneous speech sampling and allows for many aspects of the interaction to be coded. Spontaneous speech sampling is a common method of assessing language input in adult-child interactions (Hart & Risley, 1995; Hoff, 2003). Spontaneous speech sampling involves video or audio recordings of verbal interactions between a child and an adult which are then transcribed and coded by the researcher. A number of procedures have been used to elicit speech samples. These have varied depending on the aims of the research and the age of the children. The information that

can be gathered from speech sampling is much more extensive than that generated by a standardised test. Analysis of these speech samples often utilises a specialised transcription programme that allows the researcher to analyse language along numerous quantitative and/or qualitative dimensions (Miller, 1981). Despite the many advantages of language sampling, the absence of a standardised sampling protocol means that variability in the sampling procedures with respect to context, length of the sample, transcribing and coding procedures, can lead to conflicting conclusions (Finestack, Payesteh, Disher, & Julien, 2014; Kemp & Klee, 1997).

Programmes such as the Systematic Analysis of Language Transcription (SALT) (Miller, Andriacchi, & Nockerts, 2011) and the Codes for the Human Analysis of Transcripts (CHAT) transcription conventions in the Child Language Data Exchange System (CHILDES) (MacWhinney & Snow, 1990) include normative databases which enable comparison across samples. These databases have sampling protocols which provide a step by step guideline for collection of the language sample. These programmes can calculate a range of measures, dependent on what the researcher has coded. The following paragraph notes some of the microstructure measure analyses reported in the literature. In addition to quantifying these outputs, relationships between them can also be explored in line with the aims of each study.

A commonly used measure is the number of total words spoken by each individual, also referred to as 'word tokens' (Hart & Risley, 1995; Hirsh-Pasek et al., 2015; Hoff, 2003; Vigil, Hodges, & Klee, 2005). This is often used in conjunction with the number of different words or 'word types' (Hart & Risley, 1995; Hoff, 2003). The type-token ratio (TTR) is a measure of lexical diversity and is calculated by dividing the number of different words by the number of total words. A higher TTR indicates greater lexical diversity. The mean length of utterance (MLU) is a commonly used indicator of syntactic complexity. It is typically defined as the mean number of words or morphemes in an utterance. A higher MLU indicates

higher syntactic complexity (Hoff, 2003; Miller, 1981; Vigil et al., 2005). The number of utterances is another commonly reported measure (Hart & Risley, 1995; Hoff, 2003; Vigil et al., 2005).

Language Supporting Techniques

Various ways of coding language function have been developed. Two approaches which include identifying high quality language techniques are those described in the Learning Language and Loving It programme (LLLI) (Weitzman & Greenberg, 2002), and the Language Focused Curriculum (LFC) (Bunce, 1995). LLLI is a programme which focuses on teaching early childhood educators how to facilitate language development via linguistic responsivity (Weitzman & Greenberg, 2002). There are five key theoretical foundations which underpin the strategies taught in the programme. Firstly, children's language development occurs though naturalistic interactions with the people around them. This is based within the Vygotskian theory (Vygotsky, 1978) which posits that children's learning is "achieved through mediated practice and social interactions with adults" (Weitzman, Girolametto, & Greenberg, 2006, p. 129). Secondly, responsive input is key to children's language development. Thirdly, children benefit from being active members in interactions. Children are more likely to benefit from interactions which allow them to practise their communication skills and to expose them to high quality input from adults (Weitzman et al., 2006). Fourthly, vocabulary exposure is predictive of vocabulary growth. This connection has been reported in a number of studies which have found a positive relationship between vocabulary exposure and later achievement (Dickinson, 2001; Hart & Risley, 1995). Finally, decontextualised language exposure in everyday interactions is vital to language outcomes. Engagement in extended conversations often leads to the talk becoming more complex and such exposure encourages children to use language in more abstract ways.

These five components are pertinent to creating high quality language environments (The Hanen Centre, n.d.).

Stemming from these theoretical foundations, LLLI identified three clusters of language-stimulation techniques; child-oriented responses, interaction-prompting responses, and language modelling responses. Key strategies for each cluster are outlined below in *Table 1*.

Table 1: Strategies from Learning Language and Loving It (Weitzman & Greenberg, 2002)

Strategy	Definition
Child Oriented Strategies	
Wait and listen	Teacher encourages most of the children in the group to initiate verbally or nonverbally by (a) waiting expectantly for initiations, (b) using a slow pace that allows lots of time for children to initiate, and (c) listening to allow children to complete their messages.
Face to Face	Teacher adjusts their physical level by (a) sitting on the floor or in a child-size chair, (b) leaning forward to facilitate face to face interaction, and (c) if above children's level, bending to be close whenever possible
Follow the child's lead	When the children initiate verbally or nonverbally, teacher follows their lead by (a) responding verbally to their initiations, (b) using animation, and (c) avoiding commands and vague acknowledgements (e.g., uh huh, yeah).
Join in and play	Teacher actively joins in the children's play as a partner by building on their focus of interest and playing without dominating.
Interaction Prompting Strategies	
Encourage turn-taking	Teacher encourages extended verbal turn-taking by (a) linking comments and questions and inviting children to take turns, (b) responding with animation, (c) waiting expectantly for a response, and (d) balancing the number and length of adult to child turns

Table 1 Continued

Questions	Teacher encourages conversation with most of the children in the group by asking a variety of WH questions, using Yes/No questions only to obtain information and clarify messages, waiting expectantly for a response, and avoiding test and rhetorical questions.
Scan	Teacher facilitates the participation and interaction of all children in the group by (a) encouraging uninvolved children to participate and (b) ensuring that no one child dominates the interaction
Language Modelling Strategies	
Use a variety of words	Teacher uses a variety of vocabulary by emphasizing key words; repeating words; labelling of objects, actions, attributes, and events; avoiding non-specific words; and adjusting the vocabulary to each child's ability.
Expand	Teacher expands by repeating the child's utterances with a slight correction to the grammar or by repeating the child's utterance and adding another idea.
Extend	Teacher provides information related to the child's topics or ongoing activity by modelling decontextualised language through using comments to inform, project, imagine, pretend, explain, talk about the future or feelings.

Bunce (1995) developed the Language Focused Curriculum (LFC) which is designed to increase the quantity and quality of children's language learning experiences. The LFC was primarily developed for children with language limitations. There is a focus on daily dramatic play as a way of demonstrating linguistic concepts. Similar to the strategies described above, the LFC refers to eight language stimulation techniques which are described below in *Table 2*.

Table 2: Language Focused Curriculum Techniques (Bunce, 1995)

Language Stimulation Technique	Definition
Focused Contrasts	Provides a contrast between two or more speech sounds, lexical items, or syntactic structures
Models	Statements, comments or requests that contain a sound, word or grammatical construction not yet mastered by the child or that represents a form or function used in the classroom
Event Casts	Provides ongoing description of an activity
Open Questions	Questions that have a variety of possible answers
Expansions	Utterances that follow a child utterance and provide additional semantic information
Recasts	Utterances that follow a child utterance and use varied syntax
Redirect/ Prompted initiations	Directs a child to initiate interaction with another child
Scripted play	Provide verbal descriptions of familiar events

Justice (2004) discusses components that make for a language-rich classroom environment, concluding that such an environment is where "children are *exposed deliberately* and *recurrently* to *high-quality* verbal input among peers and adults and in which adult-child verbal interactions are characterised by high levels of *responsiveness"* (p. 37) [emphasis added]. High-quality input is characterised by diversity in the content, form, and use of the adult's language. These components are also central to the four strategies discussed by Burger (2015) which aim to foster child language development, namely, dialogic reading, use of refined words, multiple readings of a story with explanation of unfamiliar expressions, and interactive book reading. These four strategies have three core elements in common with those described by Justice (2004); firstly, providing children with the opportunity to hear and use language (exposure, deliberateness); secondly, exposing children to language use in contexts which are meaningful and relevant to them (exposure, deliberateness, high-quality),

and finally, shared interactions which require active involvement from the child (responsiveness).

A New Zealand ECE resource titled *Much More than Words* (Ministry of Education, 2008) aims to provide teachers with information on communication development in the areas of hearing, listening, speech, and language. This resource provides strategies for teachers to use to encourage language development. The strategies identified in *Much More than Words* are compatible with those described in the Learning Language and Loving It (LLLI) programme. The child-oriented strategies referred to are: using meaningful language and activities that follow the child's interests, awareness of background noises, and gaining the child's attention before speaking to them. Interaction-prompting strategies referred to are: creating the need for talk by waiting for the child to verbalise their problem before responding, allowing the child time to respond, and reducing questions which only require one-word answers. The language-monitoring strategies referred to are: use of appropriately complex language, using specific vocabulary, repetition of child utterances and positive reinforcement. *Much More Than Words* also discusses four specific language development techniques; commenting, expansion, choice questions, and sentence completion. Thus, while there are numerous programs describing different strategies there is considerable commonality between the strategies. Due to these commonalities, the current study focuses on the strategies identified in the programs, rather than the specific programs themselves.

There is support throughout the research for the assertion that certain interaction strategies are more likely to facilitate language development than others. Although often referring to the same concept, researchers frequently use different names or codes for the strategies they identify. This can make it difficult to draw conclusions or comparisons when evaluating the literature. Research on language interactions between teachers and children in

ECE has explored not only variation in the *quantity* of language engaged in by the adult and child but also variation in the *quality* of language.

Studies of Teacher-Child Language Interaction

Considerable research has been undertaken into the quality aspects of interaction which are likely to facilitate language development in educational settings. However, there is significant variability reported in the degree to which teachers utilise these strategies. This section discusses studies of language interactions between teachers and children.

Tyler-Merrick (2003) assessed adult-child talk and child-child talk in the New Zealand preschool setting by making six 10-minute video recordings of each of the 40 children in the sample. Talk was transcribed and then coded according to a scheme developed by the researcher. Adult talk was classified as: requests, questions, statements, prompts, encouragements, discouragements, and elaborations. Tyler-Merrick reported that the number of words addressed to children by adults was on average 995 words per hour in the preschool setting. This level of input is less than the average 1440 words per hour of input reported by Hart and Risley (1995) of adult-child interactions in their study in the home setting.

Kontos (1999) described the talk of 40 preschool teachers during free play. Teachers were audio recorded via wireless microphones and told to 'go about their daily activities as they ordinarily would' (p. 367). Transcripts were coded for three different variables; type of verbalisation, role of the teacher, and activity. Teacher talk with children was moderated by the role they took on (e.g., observer or play enhancer) and the activity setting. Nearly 75% of teacher talk fitted into one of four categories; support play with objects via statements (21%), practical/personal assistance (19%), support play with objects via questions (18%), and positive social contacts (16%). Although teachers spent most of the time managing or enhancing play, these conversations were "not exactly filled with rich, stimulating content… [suggesting] room for growth in the area of quality" (Kontos, 1999, p. 379).

Dickinson, Darrow, and Tinubu (2008) conducted a study with four preschool teachers to assess variability in the quality of conversations in early childhood centres. Conversation quality was analysed during block play and dramatic play between a teacher and a child. These settings were chosen as the materials given did not constrain the interaction. Ten minutes of the block play and five minutes of dramatic play was videoed, and this was then transcribed and analysed using the SALT software (Miller & Chapman, 1998). Analysis generated the following measures; total utterances, words per session and per minute, number of complete words, number of different words, and the ratio of distinct word types relative to total words used. Transcripts were also analysed for the frequency of strategies thought to support language growth using a coding scheme developed by the researchers. The following strategies were coded: (a) teaching words and information and linking these to the curriculum, (b) response to a child's initiation or question, (c) thought-provoking questions or suggestions, (d) modelling language use, (e) extended sequences and (f) cognitive extensions. Dickinson et al. (2008) found that teachers spoken an average of 12.68 utterances and 78.12 words, per minute. It was reported that all teachers used some form of the strategies identified by the researchers as being supportive of language development. Thought provoking questions and topic extending discussions were found to be the most commonly used strategies. A reported lack of teacher responses to children's initiations and questions suggests that the children were potentially not in contexts which facilitated their engaging in such utterances, a finding similar to that reported by Tizard and Hughes (1984).

Girolametto and Weitzman (2002) examined 26 preschool teachers' use of three subtypes of interaction responsivity (child-centred, interaction prompting, and language modelling) across two age groups (toddlers and pre-schoolers) and two naturalistic contexts (book reading, and playdough activity). Data collection involved videotaping teacher-child

interactions for 15-minutes in each of the two contexts. The last ten-minutes of each of the videos were transcribed using the SALT software (Miller & Chapman, 1998) and analysed to provide data on language productivity. Teachers were also evaluated using the Teacher Interaction and Language Rating Scale (Girolametto, Weitzman, & Greenberg, 2000). Findings revealed that teachers did not differ in their use of child-oriented and interaction-prompting strategies as a function of the children's age. While teachers of pre-schoolers used more extensions of children's utterances, the teachers of both age groups used similar levels of expansions which reframed children's words into grammatically and semantically advanced utterances. The interaction context influenced the teachers' use of responsive strategies, with greater numbers of these being used during the playdough activity than during book reading. There was a positive correlation between all three responsivity subtypes and variations in pre-schooler's language productivity. However only the interaction-promoting strategies were correlated with toddler language productivity.

Bouchard et al. (2010) studied 22 teachers from 18 different ECE centres in Canada. The study examined the language support practices being used by teachers and to see whether teacher use of language support practices was correlated with structural quality variables (e.g., teacher training). Morning snack times at the centres were videotaped once for each teacher and coded using a translated and adapted French version of the Teacher Interaction and Language Rating Scale (Girolametto et al., 2000). Results suggested that there was a low use of language support practice during snack time. The lack of variability apparent on measures of teacher training meant its effect on teachers' use of language support practices could not be determined.

Justice, Mashburn, Pence, and Wiggins (2008) conducted a randomised control study which aimed to evaluate the influence of the Language Focused Curriculum (LFC) (Bunce, 1995) on children's expressive language skills. The study randomly assigned 14 preschool

teachers to either an LFC or control condition in which they maintained their existing curriculum. Teachers in the LFC condition undertook three days of professional development on how to implement the curriculum. Measures of children's expressive language were gathered at two time points (Fall and Spring) via psychometric assessment and a 10-minute spontaneous speech sample. The speech sample was gathered during a videotaped session with a researcher, in which playdough and a variety of other props were used as a point of discussion suggested by Paul, Tetnowski, and Reuler (2002). These samples were then transcribed and analysed using the SALT software. Results indicated that children's language skill, socioeconomic status, and attendance rate at Time 1 served as positive predictors of their language skill at Time 2. Children from both curriculum conditions demonstrated similar levels of growth in their language skills, which was moderated by attendance rates. One possible reason for the null effects of the LFC is that the programme used in the control condition is one that has been positively associated with children's language growth (Landry, Swank, Smith, Assel, & Gunnewig, 2006). Pence, Justice, and Wiggins (2008) published an additional analysis of this dataset and concluded that the teachers exhibited some fidelity to the activity contexts but that their use of language support techniques was still relatively low after a year of curriculum implementation. The technique which teachers used most frequently was recasts. This was hypothesised to be because recasts are teacher utterances which occur immediately following a child's utterance and simply require the teacher to repeat the child's utterance with a slight variation in syntax (Bunce, 1995).

Massey et al. (2008) investigated the complexity of questions asked by 14 preschool teachers in classrooms with four-year-old children. The researchers gathered video recordings of between 90 to 120 minutes of instructional activities within the classroom. Two 12-minute activities were transcribed and entered into SALT. Activity context was classified into adult directed activities, child directed activities, or story-reading, using the classifications from

Bunce (1995) and Girolametto and Weitzman (2002). Teacher questions were coded for complexity using three codes: (a) management questions which were used to maintain conversation, (b) less cognitively challenging questions which referred to closed-questions or those that were perceptually focused, and (c) more cognitively challenging questions which were those that were conceptually focused (Massey et al., 2008). Results showed that approximately one third of teacher talk was made up of questions, a finding that is consistent with those of other studies (De Rivera, Girolametto, Greenberg, & Weitzman, 2005). Massey et al., found a substantial range across teachers both in the total number of questions asked (53-220) and the number of more cognitively challenging questions posed (11 to 100). Massey et al., also found that the most commonly used questions were management based, similar to Dickinson and Smith (1991). More cognitively challenging questions were the next most commonly used and these occurred within the context of story-reading. Analysis also revealed no significant differences between teachers' use of more and less cognitively challenging questions in either the child or teacher directed activity contexts.

Turnbull et al. (2009) explored children's exposure to adult language input in the preschool classroom using codes from the Language Focused Curriculum (LFC). They focused specifically on the relationships between teacher use of language support techniques, group size and activity context. Six language support techniques were examined, namely modelling, event casts, open questions, recasts/expansions, redirects/prompted initiations, and focused contrasts. Turnbull and colleagues gathered a total of 5,017 teacher utterances across 14 different preschool classrooms. Only 36% of the teacher's utterances were classified as language stimulating, meaning that 3,211 of the teacher utterances did not serve to actively enhance children's language. Models and recasts were the most frequently used techniques, but these only occurred at an average rate of three and one per minute, respectively. The rate of open question use (less than one per minute) was reported to be similar to the rate used by

untrained parents participating in the study conducted by Crain-Thoreson and Dale (1999). Turnbull et al also reported that the techniques more frequently used were those that were independent of the child's discourse, indicating that the teacher talk was not occurring in a responsive manner. Neither group size nor activity predicted technique use. This study indicated that LST use was more likely to occur in activities which are child-directed and within a small group size, consistent with findings from existing literature (Kontos, 1999).

Cabell, Justice, McGinty, DeCoster, and Forston (2015) coded preschool teacher-child interactions with the aim of ascertaining the outcomes of the professional development programme Learning Language and Loving It (LLLI) on the volume and quality of teacher-child conversations. Forty-four teachers were assigned to either a professional development group or a control group. The control group teachers were instructed to continue with typical classroom practice. Play sessions were videotaped and then transcribed using the SALT programme (Miller & Chapman, 1998). Teacher talk was coded for *elicitations* and *extensions.* Elicitations were defined as either open-ended questions or open-ended prompts. Extensions were defined as utterances that expanded on what the child had said, by providing additional information. Unlike prior research focused on documenting changes in teacher practice, this study transcribed, coded and parsed the teacher-child conversations, rather than using rating scales and interval schemes. Results indicated that half of all conversations involved fewer than four turns. Teachers varied in the frequency with which they used elicitations and extensions, ranging from one to 30 uses per conversation. Other analyses revealed that the frequency of teacher strategy use was significantly related to the child's vocabulary development over the year. Overall, this study makes an important contribution in furthering the understanding of teacher-child conversations and what these look like in preschool settings.

Justice, McGinty, Zucker, Cabell, and Piasta (2013) examined the extent to which teachers' and children's production of syntactically complex utterances had a sequential dependency on the other speaker's production of these utterances. They also sought to establish the extent to which the general language ability in a classroom predicted the strength of these associations. Thirty-nine preschool teachers were instructed to select a small group of four to six children to engage in a play session using a uniform set of materials (playdough). Interactions were videoed for 20-minutes and the middle 10-minutes were transcribed and coded using the SALT software. Utterances were segmented into Minimal Terminable Units (T-Units) which were defined as "one main clause with all subordinate clauses attached to it" (Hunt, 1965, p. 20). Utterances were then coded according to their clausal density (number of complex T-units relative to total T-units). The coding scheme was adapted from Huttenlocher, Vasilyeva, Cymerman, and Levine (2002) and comprises three codes; (a) containing one clause (simple), (b) containing multiple clauses (complex) and (c) no verb clauses (no). Justice et al. (2013) reported substantial variation in the number of teacher's total T-units, ranging from 64 to 277 (M = 135.58). Children's total T-units ranged from 41-181 (M = 92). There was also a large range in the number of complex T-units used by teachers (M = 40.31, SD = 14.48) and children (M = 12.56, SD = 7.60). Excluding the no T-unit codes, complex codes made up 36% of teacher talk and 22% of child talk. The key finding from this study is that children in different early childhood education settings are "experiencing very different language learning environments, a point that is consistent with other studies examining various aspects of teacher classroom language use" (Justice et al., 2013, p. 504).

Dickinson and Porche (2011) explored the indirect effect that preschool teacher talk had on fourth-grade outcomes for children from low-income families as part of a longitudinal study. Data were gathered via teachers wearing small backpacks with tape recorders and

microphones on their collars as well as having observers present in the classroom to make supplementary notes. Teacher talk was analysed for the percentage of teacher extending utterances, percentage of sophisticated vocabulary, and ratio of teacher talk relative to child talk. Results from an analysis of 74 15-minute samples found that teacher-to-child speech ratio was negatively related to child literacy skills when assessed during kindergarten and at grade four. This indicates that the higher proportion of teacher talk compared to child talk during preschool, the lower children's literacy skills were, suggesting there may be a point where the quantity of teacher input can be detrimental to the ongoing development of these skills. The proportion of sophisticated vocabulary used by teachers was positively related to children's levels of receptive vocabulary and emergent literacy at kindergarten and fourth grade, and their comprehension and word recognition at fourth grade. Teacher utterances that extended talk were positively related to all children's language and literacy outcomes at both kindergarten and fourth-grade. This study further demonstrates that teacher talk during early childhood education can have a lasting impact on child language and literacy development.

Dwyer and Harbaugh (2018) identified two key concerns across current descriptive studies of language in the preschool setting. Firstly, they noted a lack of consistency regarding the activity settings that are being observed, for example settings used to examine language measures include block play and dramatic play (Dickinson et al., 2008), free play and group time (Dickinson & Porche, 2011) and, play-dough activities (Cabell et al., 2015; Justice et al., 2013). Secondly, they identified significant variability in the specific behaviours that are being coded, and in how these had been operationalised. Thus, although many of these studies are reporting similar concepts within broadly similar settings, important differences as well as the lack of specificity in defining the codes makes it very difficult to ascertain what preschool teachers are doing to support children's language development.

There does not appear to be a suitable coding scheme which allows for functional coding of all language in an interaction.

Early Childhood Education in New Zealand

A large majority of New Zealand children attend some form of early childhood education (ECE) service prior to commencing primary school around age five (96.9% as at June 2018) (Education Counts, 2018). New Zealand has many different types of ECE for families and whānau to choose from, and these can be sessional or full day and include both teacher-led and parent-led services.

All registered ECE services must employ the national curriculum: Te Whāriki: He Whāriki Mātauranga mō ngā Mokopuna o Aotearoa (Te Whāriki; Ministry of Education, 1996, 2017). The interwoven strands and principles of this early childhood curriculum are depicted in Figure 1. Each strand has associated goals and learning outcomes designed to inform the curriculum. However there is great variation in the way in which these principles, strands, and goals are implemented across individual settings (Arrow, 2010; Hamer & Adams, 2003). The communication strand is the strand most relevant to the present study as it addresses goals related to language development and its facilitation. The four goals within this strand specify that children should experience an environment where they (a) develop verbal and nonverbal communication skills for a range of purposes, (b) experience the stories and symbols of their own and other cultures, and (c) discover and develop different ways in which they can be creative and expressive (Ministry of Education, 1996). Fulfilment of these goals is "fundamental to learning and to effective participation in intellectual, emotional, and social life" (Ministry of Education, 1996, p. 97).

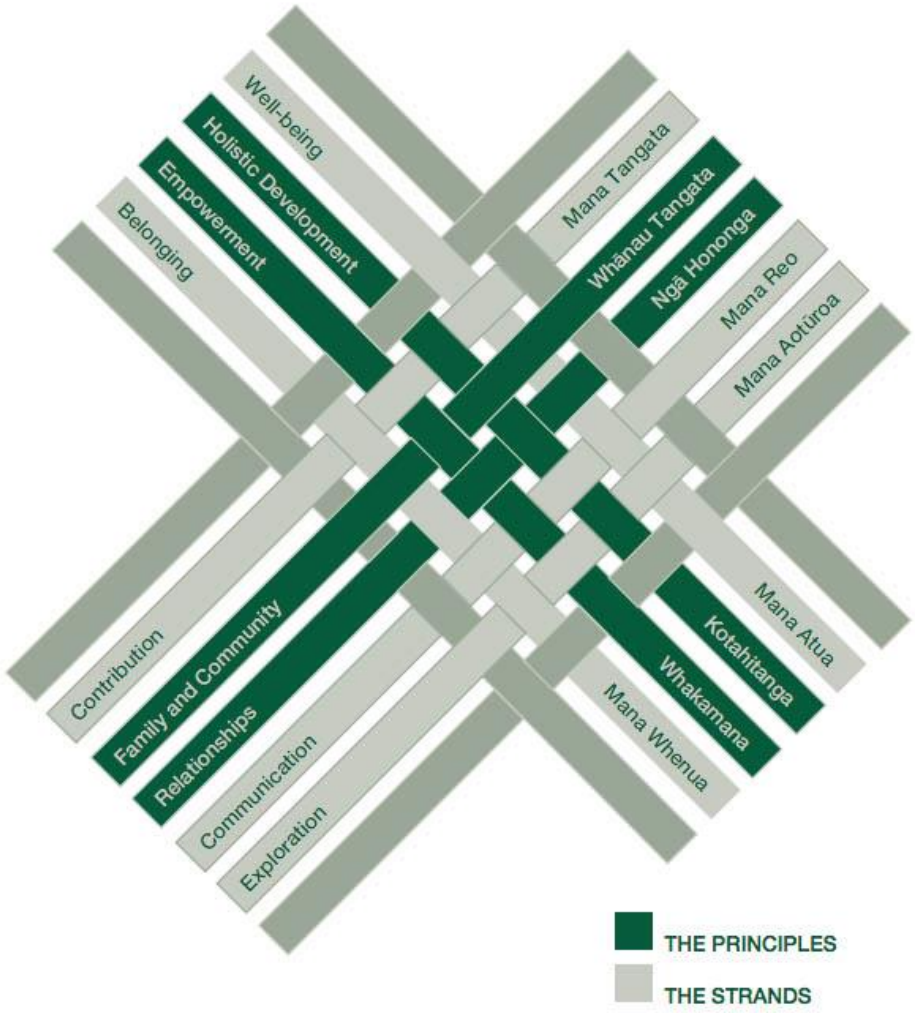

Figure 1: Te Whāriki Framework (Ministry of Education, 1996)

Early childhood services are subject to regular external evaluation by the Education Review Office (ERO). One of the components of the ERO evaluations is the extent to which each service is able to promote positive outcomes for children. Evaluation is done via ensuring regulation compliance, specifically in the areas of "emotional safety, physical safety, hygiene, suitable staffing, evacuation procedure, and practice in case of a fire or earthquake" (OECD, 2016, p. 3). This method of evaluation does not mention children's learning outcomes. The OECD report also notes variation within and between early childhood services in the way learning outcomes are measured. Outcome assessments in New Zealand ECE take the form of individual narrative assessments such as 'Learning Stories'.

Kei Tua o te Pae/Assessment for Learning: Early Childhood Exemplars takes the form of a series of 20 booklets intended to inform assessment practice in ECE. These books provide exemplars of learning stories and introduce principles that aim to support teachers in creating learning assessments for children that fit within their learning communities (Ministry Of Education, 2004). In 2006, the Education Review Office (ERO) conducted a review of the quality of assessment in 389 early childhood services across New Zealand. It concluded that "the reflection of children's learning and development in assessment, the use of assessment to inform learning and the contribution of assessment information to ongoing self-review needed improvement in half the services" (Education Review Office, 2007, p. 1).

A more recent report discussed how early oral language and learning development was being supported in the early years of education (Education Review Office, 2017). Data were gathered from 167 early learning services and 104 schools. The ERO reported that few services demonstrated an understanding of what was required to support children's oral language development and that there was a large spread in the focus which services placed on furthering their students' growth in this area. Early learning services and schools were evaluated regarding their focus on language and learning development using the following categories; (a) well focused, (b) some focus, or (c) limited or no focus. Category (a) included 19% of early learning services and 35% of teachers, category (b) included half of the early learning services and 36% of schools, and category (c) included 31% of early learning services and 29% of schools (Education Review Office, 2017). This data shows the variation in focus evident in the different services.

In 2002, the New Zealand Ministry of Education launched a ten-year strategic plan entitled *Pathways to the Future: Ngā Huarahi Arataki*. The vision of this plan was for all New Zealand children to have equal opportunity to engage in quality early childhood education (Ministry of Education, 2002). The key foci of the plan were to promote

participation and collaboration in and between early childhood services. A further aim was to improve the quality of these services by increasing the number of registered teachers in each service. Following implementation of this plan, childcare centres were renamed education and care centres to acknowledge the importance of education within these settings. The current government is in the process of establishing a new *Early Learning Strategy Plan* (Ministry of Education, 2018). The plan will be centred around three proposed themes: raising quality, improving equity, and the role of choice. A cabinet paper released by the Minister of Education acknowledged the detrimental impact that low quality ECE can have on children and that "the quality of early learning in New Zealand is variable" (Hipkins, 2018, p. 4). This plan aims to explore how quality in ECE is to be measured and how a high level of quality can be maintained. The equity theme aims to address the achievement gap between children from different backgrounds and to ensure that the sector is responsive to the needs of all children. The role of choice theme refers to the proportion of females entering the workforce and notes that the plan aims to "be responsive to parents' labour market aspirations in a modern and rapidly changing working environment" (Hipkins, 2018, p. 4). As the quality of teacher talk is one of the central foci of the present study, this makes it particularly relevant to current policy development.

Aims of the Current Study

The frequency and quality of the language input that children receive, both in their home and school environments, is integral to their development. Our knowledge, understanding, and ability to use language underpins nearly all aspects of life. If children are not provided with quality language input then they are "effectively prevented from capitalizing on the power of education to improve and enrich their lives" (Honig, 2001, p. 1). Research to date has used two different ways of analysing teacher-child language interactions; a) functional analysis, and b) linguistic analysis. Functional analyses capture the

content and *use* aspect of language, whereas linguistic analyses capture the *content* and *form* of language (Bloom & Lahey, 1978). The present study aims to examine all three aspects of language by using both methods to analyse a sample of teacher-child interactions. The use of both methods allow for both frequency and quality measures of teacher and child language to be assessed. The following research questions were the main focus of the study:

(1) How successful was the protocol in eliciting a suitable language sample which allows key features of teacher and child language to be assessed?

(2) What is the frequency and variability in outcome measures when the language sample is analysed using Systematic Analysis of Language Transcripts software (a) for teacher talk and (b) for child talk?

(3) What is the frequency and variability in outcome measures when the language sample is analysed using a Modified Hart and Risley Coding Scheme (a) for teacher talk and (b) for child talk?

(4) What, if any, are the relationships between teacher talk and child talk when outcome measures are analysed using these two analysis methods?

Chapter 2

Method

Ethical approval

Ethical approval for the present study was obtained from the Education Research Human Ethics Committee (ERHEC) of the University of Canterbury. This approval is presented in Appendix 1. The study initially proposed to include participants from both centre-based and home-based services. The initial recruitment process revealed very few children meeting age group eligibility for inclusion in the study and who were receiving home-based early childhood services. Therefore, the initial ethics application was amended to represent the current study in which all participants were recruited from centre-based early childhood services. Approval for this amendment is shown in Appendix 2.

Design

The present study took the form of a descriptive research design (Stagnor, 2011).

Participants

Several early childhood organisations were approached by the researcher to participate in this study. Two large, privately owned, centre-based organisations gave consent for their Christchurch centres to participate. The managers of each organisation went through a list of suitable centres with the researcher and contacted them in advance to inform them about the study. The Organisation Information Form outlined the aims of the study and is reproduced alongside the Organisation Consent Form in Appendices 3 and 4, respectively.

Fifteen different centre managers were approached and invited to participate in the present project. A maximum of two teachers from each centre were invited to participate. Teachers were required to be registered with the New Zealand Education Council. A Teacher Information Form outlined the aims of the study and what teachers would be required to do (see Appendix 5). Teachers were required to sign the Teacher Consent Form (shown in

Appendix 6) before completing a ten-item questionnaire (shown in Appendix 7). Two teachers declined to participate due to time constraints, and one teacher declined to participate on the grounds that the research did not align with the philosophy of the centre. One teacher agreed to participate but did not complete the recordings and a second had difficulty using the recording device and did not complete the recording tasks. Data for 13 teacher-child dyads was collected, but three had to be discarded because the teachers did not complete all three recordings.

Ten early childhood teachers from nine ECE centres in Christchurch supplied complete data. The demographic details of these teachers are presented in Table 3. All were female, and they varied with respect to their years of experience in early childhood education ranging from four-and-a-half years to 27 years. Seven of the ten teachers reported that they had their own children. Teachers had been working in their current centre between five months and eight years with an average of 47.5 months.

Table 3: Teacher Demographics

Participant	Total experience in ECE (years)	Time in current centre (months)	Ethnicity	Own children	Decile level of nearest primary school
Teacher 1	4.5	30	NZE	No	10
Teacher 2	6	42	English	Yes	7
Teacher 3	8	96	NZE	Yes	1
Teacher 4	12	96	NZE	Yes	10
Teacher 5	17	15	NZE	No	9
Teacher 6	17	37	NZE	Yes	9
Teacher 7	8.5	96	NZE	Yes	8
Teacher 8	27	42	NZE	Yes	4
Teacher 9	10	16	NZE	No	3
Teacher 10	11	5	NZE	Yes	1
Mean	12.1	47.5			
SD	6.32	33.7			

Note: NZE = New Zealand European

The teachers in each service were requested to randomly select a child who fitted the selection criteria, to record. Children were required to be within two months either side of their fourth birthday at the time of recruitment, to be typically developing, and to speak New Zealand English as a first language. Parents were given the Parent Information Form and Parental Consent Form (shown in Appendices 8 and 9). These outlined what the study involved and what their child would be invited to do. Parents were then required to go through the Child Information Form and Child Assent Form (shown in Appendices 10 and 11) (a) to ensure that their child was happy to participate in the study and (b) to ensure that their child understood what they would be asked to do. Four girls and nine boys were recruited, however three were excluded from the study due to missing data, as reported above. This resulted in a final sample of ten children (two girls and eight boys).

Settings

The study was carried out in nine different ECE centres across Christchurch. Decile levels were gathered to indicate the socio-economic level of a school's community. Decile levels in New Zealand are based on the socio-economic status (SES) of households in a school's catchment area and contribute to funding allocation decisions (Ministry of Education, 2017b). Deciles are recorded on a 10-point scale, where 1 indicates the lowest and 10 the highest SES. As decile levels are only recorded for the compulsory school sector in New Zealand, decile ratings were gathered for the primary school nearest to each centre. As can be seen from Table 3, two participants were each nearest a Decile 1, Decile 9 and Decile 10 primary school, whilst the other four were nearest primary schools with decile rankings of 8, 7, 4, and 3.

Measures

The following measures of child language were collected.

Clinical Evaluation of Language Fundamentals – Preschool, 2nd Ed. Two supplementary teacher report checklists were completed from the Clinical Evaluation of Language Fundamentals – Preschool, 2nd Ed (CELF-P2) (Wiig, Secord, & Semel, 2004). Each checklist consists of 26 questions and responses indicate the frequency of the behaviour on a five-point-scale; Never, Sometimes, Often, Always, or Not Appropriate. Age-based criterion scores indicate whether a child meets or does not meet the cut-off for adequate pre-literacy skills or pragmatic abilities. These two checklists were selected to provide useful information about a child's individual communicative strengths and weaknesses.

The Descriptive Pragmatics Profile. The Descriptive Pragmatics Profile (DPP) aims to identify verbal and nonverbal pragmatic deficits that might hinder communication in the context of social or academic situations. It consists of three sections; nonverbal communication skills (7 questions), conversational routines and skills (12 questions), and asking for, giving, and responding to information (7 questions). The DPP has a high level of internal consistency, 0.96 for ages four to four-and-a-half years old (Wiig et al., 2004).

The Pre-Literacy Rating Scale. The Pre-Literacy Rating Scale (PLRS) is a checklist designed to identify milestones in early literacy skills development. It has a section on emergent reading skills (12 questions) and a section on emergent writing skills (14 questions). The PLRS also displays excellent internal consistency, 0.93 for ages four - to four-and-a-half years old (Wiig et al., 2004).

Expressive One Word Picture Vocabulary Test-4. The Expressive One Word Picture Vocabulary Test-4 (EOWPVT-4) is a measure of expressive vocabulary (Martin & Brownell, 2010). Children are presented with a picture and then asked a question about it, to which the child is required to give a one-word response. Testing stops when the child makes six consecutive errors. It has high levels of internal consistency, with a median of 0.95 across all

age groups. The EOWPVT-4 has high test-retest reliability (0.97 for standard scores and 0.98 for raw scores).

Peabody Picture Vocabulary Test-IV. The Peabody Picture Vocabulary Test-IV (PPVT-IV) was used to measure the receptive vocabulary of the participating children (Dunn & Dunn, 2007). This is a straightforward assessment which involves showing the child four pictures and asking them to indicate which one represents the word spoken by the researcher. Children indicate their answer by pointing to the chosen picture and are not required to provide a verbal response. Testing stops when the participant makes eight errors in a set of 12. The PPVT-IV has been shown to have high test-retest reliability of 0.91-0.94 (Dunn & Dunn 2007).

Procedures

Vocabulary Testing. The researcher met with each of the participating children on two occasions to complete the two vocabulary measures. These assessments took place in a space in the ECE setting where the child felt comfortable and any factors which may have been distressing were minimised. For example, there was always a teacher nearby. The PPVT–IV was completed first as it did not require verbal input from the children. This allowed each child to become familiar with the researcher before the expressive vocabulary test was administered. Children were given the opportunity to stop a test if they appeared to be getting frustrated or upset. One child (Child 5) got bored and walked off before making the required number of errors to stop, and hence did not meet the discontinue rule for the PPVT-IV.

Spontaneous Speech Sampling: Teachers were asked to collect three, 10-minute samples of a shared play interaction with their participating child using a set of toys provided by the researcher. The toys were a 24-piece Kids & Co plastic animals set from K-Mart, suitable for ages three years and up. Teachers were not restricted to playing only with the

animals provided, but they did need to include them in each interaction. No other instructions were given to the teachers regarding how they should act during the 10-minute interactions.

Teachers were provided with a DVR Mini U8 USB Flash Drive Camera. This is a small USB-like device which captures an audio and a visual recording. After recording, the device connects to a computer via a USB port and the video file can be downloaded directly. Teachers were asked to complete the recordings in a quiet area away from other children. However due to the ECE requirement of having a certain number of teachers on the floor, this was not always possible. In three of the 30 recordings, interactions were briefly interrupted by an off-camera comment from a non-participating child. These comments were excluded from the analysis. Teachers were given instructions for the flash drive camera and were shown how to use it by the researcher. They were encouraged to contact the researcher if they needed further assistance. No children, other than those who were participating, were visible in any of the recordings. Four of the teachers elected to capture the audio and video recordings on their personal smartphones. The resulting files were downloaded by the researcher and deleted from the teacher's device. The quality of these video files was indistinguishable from those from the flash drive cameras and were deemed acceptable for inclusion.

Teacher Checklist. Following completion of the recordings by the teacher and vocabulary testing by the researcher, the teachers completed two supplementary checklists from the CELF-P2 (the Descriptive Pragmatics Profile and the Pre-Literacy Rating Scale).

Transcription and Coding

Transcripts. The videos were transcribed individually, and the transcripts coded by the researcher. Two separate coding schemes were applied. The first was in accordance with the Systematic Analysis of Language Transcripts (SALT), New Zealand/ Australia, Version 18 (NZ/AU-18) protocols (SALT software, LLC; Miller, Gillon & Westerveld, 2017). The

second was a modified Hart and Risley scheme developed by the researcher, hereafter referred to as the MHRS.

Coding Scheme 1: Systematic Analysis of Language Transcripts (SALT). For the first analysis, the 30 transcripts (i.e. 10 sets of three) were entered into SALT-NZAU 18 (Miller, Gillon & Westerveld, 2017) then coded. Teacher and child talk was segmented into communication units (C-units) as per the software protocol (Miller et al., 2011). Communication units are defined as 'an independent clause with its modifiers' (Loban, 1976). The following transcript conventions were applied, as per Appendix M in the SALT Reference Book (Miller et al., 2011, p. 331). Child C-units were coded for bound morphemes each of which was denoted by a slash "/", indicating that the word had been contracted, conjugated, inflected, or pluralised in a regular manner. Partial words, omitted words, and omitted bound morphemes were coded and denoted by an asterisk (*). Error codes, placed in brackets [ ], were used to mark overgeneralisation errors, extraneous words, and other word-level errors. Non-verbal utterances which had communicative intent were placed in brackets, for example: [nods]. Any comments from a participant which were directed to a non-participant were excluded from the transcript.

As the focus was on the dyad as a whole, the three transcripts from each dyad were collated into one file for data analysis purposes. Three different measures of quantity are produced by the SALT software. These are: *the number of turns*, *the number of utterances*, and *the number of words*.

SALT defines a *turn* as a speaker's utterances or words while they hold the floor, SALT counts each change in speaker as a new turn. *Mean turn length* can be generated to provide a measure of how long the turn was, either in words or in morphemes. For the current research, mean turn length has been presented in terms of words.

Utterance analysis, as described in the previous paragraph, also generated a mean length output: the mean length of the utterance in morphemes. This is a commonly reported measure in the research literature and is one which is appropriate for use when describing developing language (Heilmann, Nockerts, & Miller, 2010).

Number of words refers to the total number of words said by each speaker during the transcript. *Number of different words* is also reported as it provides a measure of lexical diversity, indicated by the type-token ratio (TTR). As transcript length increases the number of total words continues to increase whereas the number of different words is likely to plateau. Given that TTR is calculated by dividing the number of different words by the number of total words, this becomes smaller as the transcript increases in length. The *Moving Average Type Token Ratio* (MATTR) calculates the TTR for a 'moving window' of set text size and then computes the TTR for every window position and calculates the average (e.g., 100-200, 101-201, 102 -202) (Covington & McFall, 2010). This allows for the MATTR to provide a measure of lexical diversity that is not affected by transcript length.

Reliability – Coding Scheme 1. Coding of C-Units, bound morphemes, errors, and omissions were checked in 100 percent of the transcripts by the first research supervisor to ensure adherence to the coding protocols described in the manual. The software also automatically checks for entry errors and provides alerts if there are any present. Bound morpheme coding was checked using the Edit – Identify Roots option, within the SALT software. All transcripts were confirmed to be error free by the software and the research supervisor.

Coding Scheme 2: Modified Hart and Risley Coding Scheme (MHRS). Prior to coding, each transcript was first organised using a system modelled on that described by Cabell et al. (2015) and Hart & Risley (1992, 1995). First the transcript was divided into interactions by topic, with the end of an interaction indicated by a pause or by the initiation of a new topic by

either speaker. Within each of the interactions, each speaker verbalisation was identified, defined as 'each sentence or meaningful utterance' (Kontos, 1999, p. 368). The first verbalisation in an interaction was described as an *initiation* and subsequent verbalisations from the other speaker were coded as *responses* as described in Hart and Risley (1992). Teachers sometimes asked questions which they answered themselves or they asked a second question in order to maintain the interaction. When this occurred, and the teacher spoke in response to their own verbalisation, the utterance it was coded as *'floor holding'*. The following is an example of one such interaction by Teacher 6; in which the teacher asked *"How were you playing with them this morning?*". The child did not respond and, to maintain the conversation, the teacher then asked if the child could "*remember what was happening with them this morning"*. The child then responded to this second question and recalled that they were "*making a hall, maybe".* Initiations, responses, and floor-holding are terms used to refer to the type of verbalisation used. In the above example, the teacher's first verbalisation was coded as the initiation and the second verbalisation as floor holding. Below is a description of the coding scheme developed to classify the function of each verbalisation.

Once the teacher and child verbalisations had been identified each was coded for its function. The following sections describe these codes. The complete MHRS coding scheme is reproduced in Appendix 12.

Teacher Codes. The coding scheme for teacher verbalisations consisted of eleven categories; *expansions, extensions, repetitions, affirmations, recast as a question, statement, self-talk, more cognitively challenging question, less cognitively challenging questions, management,* and *non-linguistic utterances.*

These codes were grouped into one of two major categories: *complex verbalisations* or *simple verbalisations*.

The complex verbalisations were: more cognitively challenging questions, extensions, expansions, repetitions, and recast as a question. *Expansion* was defined as repetition of the child's verbalisation with slight adjustment. *Extensions* were defined as repetition of the child's verbalisation with new information, or the addition of new information in response to a child's verbalisation. *Repetitions* were defined as a direct repetition of the child verbalisation. *Recast as a question* was indicated by an inflection in the tone of the teacher's verbalisation at the end of a repetition. Questions were considered to be *more cognitively challenging* if they focused on non-present objects, past or future events, or required the child to make a prediction or to analyse information.

The simple verbalisations were: less cognitively challenging questions, statements, affirmations, management, self-talk, and non-linguistic. *Less cognitively challenging questions* were those which required simple 'yes/no' answers, asked about information that was perceptually available, or offered concrete choices. Talk in which the teacher described their own actions without engaging with the child was classified as *self-talk*. Verbalisations which did not take the form of words such as animal noises or laughter were classified as *non-linguistic*. Explicit approval of a child's words or actions was coded as an *affirmation*. Verbalisations that did not add content to the conversation or did not encourage the child to extend their talk were classified as *statements.* An example of a statement used by Teacher 6 was *'he's not here today'*. This describes an observation made by the teacher that does not require a response from the child or introduce new vocabulary. Verbalisations which served to organise or direct the child's behaviour were classified as *management.*

Child Codes. The coding scheme for child verbalisations consisted of six codes; *simple verbalisations, complex verbalisations, simple questions, complex questions, non-linguistic,* and *behavioural*. These were combined and allocated to one of three categories, namely '*complex'*, '*simple'* and '*other'* as follows: simple questions were combined with

simple verbalisations, complex questions with complex verbalisations, and non-linguistic and behavioural were combined to create an 'other verbalisation' category. These three categories were then used for data analysis. A verbalisation was coded as s*imple* if it consisted of simple single word responses, or simple verb elements. Verbalisations were coded as *complex* if complex verb elements or sophisticated vocabulary were present within the turn.

Children's use of questions were coded as either *simple questions* or *complex questions* following Massey et al. (2008) whereby simple questions were defined as closed-ended questions or those that asked about information that was perceptually available. Complex questions were open-ended questions or questions which asked about information that was not perceptually available.

The code *behaviour* was used to describe observable behaviour which was relevant to the conversation, such as nodding or shrugging, and verbalisations which did not take the form of words were coded as *non-linguistic.*

Reliability - Coding Scheme 2. The 30 transcripts were assigned numbers using a random number generator and 10 transcripts were selected for the assessment of inter-coder agreement. A further two transcripts were selected for training and practice purposes. The author and a graduate student with previous experience in transcript analysis met and systematically discussed the coding scheme, using one of the practice transcripts. The second practice transcript was then coded independently by both parties before being checked alongside the original, previously coded by the researcher. Inter-coder agreement was calculated as the percentage of codes allocated by the checker in concordance with the researcher's coding. Inter-coder agreement for the two pages of the second transcript reached 89% and 94% respectively. This training procedure is consistent with the recommended levels of 70% to 90% agreement during coder training prior to reliability checking of a randomly selected sample (Heyman, Lorber, Eddy, & Schellati, 2014). Having reached this

level of agreement, the reliability checker was then required to go through an entire transcript and allocate the appropriate code to each vocalisation.

The 10 randomly selected transcripts made up 33.3% of the total sample and consisted of 1,773 verbalisations. When checked against the transcripts coded by the researcher, 88.3 % of the codes were the same. This level of agreement was within the acceptable level of between 75% and 90% suggested by (Hartmann, 1977) and (Stemler, 2004).

Chapter 3

Results

The results are presented in five sections: (a) protocol and language samples (b) analysis of teacher and child talk using SALT, (c) analysis of teacher talk using MRHS, (d) analysis of child talk using MHRS, and (e) correlations between aspects of teacher talk and child talk.

Protocol and Language Samples

The protocol was largely successful in eliciting and recording the language samples. Thirteen teacher-child dyads were provided with the data collection instructions and all necessary equipment. Ten teachers followed these instructions and recorded three 10-minute language samples. One teacher collected fragmented video recordings ranging from ten seconds to five minutes. A second teacher followed the protocol but was unable to make a third recording. A third teacher did not use the toys in one of the recordings but read a book with the child. The language samples produced by these three teachers were discarded.
All teachers selected children who met the study criteria. However, all of the participating children scored above average with respect to their receptive and expressive language scores as can be seen in Table 4.

Both of the CELF-P2 checklists showed that the ten children were displaying descriptive pragmatic and pre-literacy skills within a developmentally appropriate range.

The language samples demonstrated that all teachers used some form of complex verbalisation. The following excerpts have been selected from the transcripts to highlight specific strategies used during the interactions. The excerpts also identify the importance of assessing quality as well as quantity, given that the nature of the interaction may be misinterpreted if only quantity is measured.

Table 4: Receptive and Expressive Vocabulary Scores of the Participating Children

Participant	Age	PPVT-IV	EOWPVT
Child 1	4:3	122	130
Child 2	4:3	121	112
Child 3	4:1	127	137
Child 4	4:0	105	117
Child 5	3:11	99*	135
Child 6	4:1	123	129
Child 7	4:3	101	111
Child 8	4:1	108	120
Child 9	4:2	103	116
Child 10	4:1	116	103
Mean	4:1	114	121

*Child 5 did not meet the discontinuation rule as he declined to complete the test
Note: PPVT-IV = Peabody Picture Vocabulary Test – Fourth Edition, EOWPVT = Expressive One Word Picture Vocabulary Test, Age = years: months at time of PPVT.

Interaction Examples

The following section provides four examples of interactions which were taken from the transcripts. These examples were selected as they are considered to provide insight into the importance of assessing interactions at both a functional and linguistic level. Three examples demonstrate the use of complex verbalisations by both teachers and children, with the final example demonstrating a missed opportunity by the teacher.

Example 1 demonstrates the use of a more cognitively challenging question which successfully elicits a complex verbalisation from the child.

Example 1 – Dyad 5

Child: What about what kinds of other foods they eat.
Teacher: I think polar bears eat fish.
Child: Don't think so.
Teacher: Why do you disagree with me?
Child: Because fish are too small for polar bears to eat.

Example 2 illustrates the use of multiple complex verbalisations by the teacher, resulting in the child successfully learning a new word. Teacher 3 used an extension to introduce and explain new content, repetition, and a more cognitively challenging question to establish understanding.

Example 2 – Dyad 3

Teacher: I wonder why they have stripes?
Child: Because tigers always have stripes.
Teacher: They do. But do you know why they have stripes? Because when they're in the jungle and they're in all the leaves and the trees it helps to camouflage them. That's a big word isn't it – camouflage. That means they're often the same colour as the leaves so that when other animals come past they can't be seen. Kind of like a special hiding this that helps them hide.
Child: And then the hippo goes by.
Teacher: The hippo goes by.
Teacher: Do you think you'd see him?
Child: No because they have invisible camouflage.
Teacher: They have invisible camouflage, now that's something I hadn't thought of.

Example 3 demonstrates the use of multiple complex verbalisations in an interaction. The teacher's use of more cognitively challenging questions, an extension, and an expansion successfully elicited multiple complex verbalisations from the child.

Example 3 – Dyad 5
Teacher: How can you determine which is the smallest one out of those three pairs?
Child: I thought, I thought these three were all the smallest.
Teacher: You think those there were the smallest, okay.
Child: But it's pretty hard to decide.
Teacher: So, what could you do to check?
Child: I think we need something smallest and small.
Teacher: You need the smallest and small.
Teacher: So you're going to line up the smallest so they're next to each other to see?
Child: Yeah.

The following example demonstrates a missed opportunity to use complex verbalisations by the Teacher. Teacher 1 used a less cognitively challenging question with the intent of eliciting a label from the child. Unlike the previous three examples in which the use of complex verbalisations by the teacher resulted in complex verbalisations by the child, the less cognitively challenging question did not result in the child using a complex verbalisation.

Example 4 – Dyad 1
Teacher: What are these?
Child: They go really fast.
Teacher: Yup.
Child: I think they're cheetahs.
Teacher: Could be.
Child: Or leopards.
Teacher: Or leopards.
Child: Leopards, yeah.
Teacher: Leopards?
Child: Yes they are.

Analysis of Teacher Talk and Child Talk

Outcome measures were analysed on four levels from the largest to the smallest units, as shown below in Figure 2. Results will be presented for teacher talk and child talk for each of the following outcome measures.

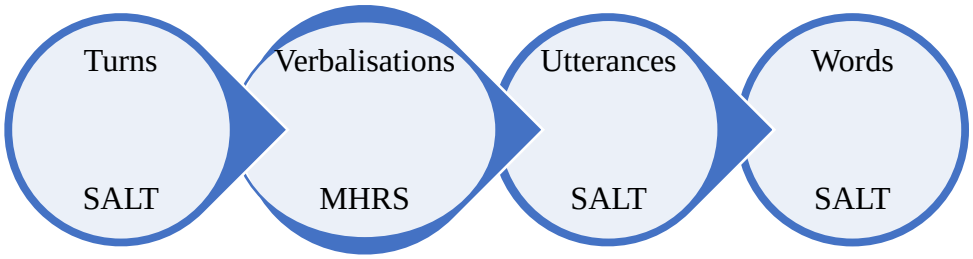

Figure 2: Analysis Procedure

Turns: Counts and Mean Length in Words

The number of teacher turns was first calculated using the Systematic Analysis of Language Transcription (SALT) software. SALT counts each speaker change as a turn, therefore, the number of child turns is the same as the number of teacher turns. The number of turns spoken by each dyad varied considerably (M = 385.2, SD = 96.5). Table 5 presents the number of turns and the mean length of turn in words for each of the 10 dyads. Whilst the range in the number of child turns was the same as the teachers at 166, children had a lower range in their mean turn length than teachers (6.02 words compared to 7.10 words) and

showed less variability within the group. Dependent means t-tests were used to determine whether the difference in turn length was statistically significant. Results revealed that teachers had significantly higher mean turn length in words than children, $t(9) = 4.93$, $p = .001$.

Table 5: Turns: Counts and Mean Length in Words

	Total number of turns spoken by dyad	Mean length of teacher turns in words	Mean length of child turns in words
Dyad 1	353	6.11	6.51
Dyad 2	296	12.41	4.60
Dyad 3	376	13.21	5.29
Dyad 4	576	6.55	2.72
Dyad 5	352	11.48	6.27
Dyad 6	244	9.92	8.75
Dyad 7	410	10.00	4.06
Dyad 8	351	9.57	3.46
Dyad 9	510	9.07	4.58
Dyad 10	384	7.12	5.40
Mean	385.2	9.54	5.16
Standard Deviation	96.54	2.42	1.72

Verbalisations: Counts and Types

Verbalisations were calculated using the Modified Hart and Risley Coding Scheme (MHRS). Within this scheme, verbalisations were classified as either 'initiations', 'responses', or 'floor-holding'. Initiations and responses were coded for both teachers and children. Floor-holding was only coded for teacher talk and was defined as a 'teacher's response to their own verbalisation'. Teacher results are presented in Table 6.

Due to variation in quantity of talk, teacher verbalisations were summed to allow for the calculation of verbalisation type as a proportion of overall verbalisations. On average, teachers contributed 55.16% of the total verbalisations ($SD = 4.17\%$). The largest

contribution was made by Teacher 2 who produced 60.75% of the dyad's total verbalisations, and the smallest contribution was from Teacher 6 who produced 47.87% of the dyad's total verbalisations.

Table 6: Teacher Initiations, Responses, and Floor-Holding

	Initiations	Responses	Floor-Holding	Total Verbalisations
Teacher 1	66	144	12	222
Teacher 2	68	134	58	260
Teacher 3	69	176	32	277
Teacher 4	112	258	42	412
Teacher 5	65	148	43	256
Teacher 6	40	90	5	135
Teacher 7	98	170	30	298
Teacher 8	69	159	16	244
Teacher 9	75	234	54	363
Teacher 10	46	170	23	239
Mean	70.8	168.3	31.5	270.6
Standard Deviation	21.32	48.10	17.79	76.09

Analysis of teacher verbalisations revealed that initiations made up a mean of 26.41% of total teacher verbalisations. These ranged from a minimum of 19.25% for Teacher 10 to a maximum of 32.89% for Teacher 7. Responses were the most frequently used teacher verbalisations (M = 62.48%). Within group variability was apparent for this category with responses contributing the least to total verbalisations for Teacher 2, at 51.54%, and the most for Teacher 10 at 71.13% of her total verbalisations. Floor-holding verbalisations made up an average of 11.12% of total teacher verbalisations. This ranged from 3.7% for Teacher 6 to 22.31% for Teacher 2. A series of paired t-tests revealed significant differences between

initiations and responses t (9) = 8.64, $p < .001$, between initiations and floor-holding t (9) = -5.93, $p = .001$, and between floor-holding and responses t (9) = 10.34, $p = .001$.

There was considerable variation in the total number of child verbalisations and in their distribution across the initiation and response categories. Counts of each type of verbalisation for each of the 10 children are presented in Table 7.

Table 7: Child Initiations and Responses

	Initiations	Responses	Total
Child 1	102	125	227
Child 2	54	114	168
Child 3	38	160	198
Child 4	29	266	295
Child 5	39	153	192
Child 6	46	101	147
Child 7	78	160	238
Child 8	45	142	187
Child 9	90	195	285
Child 10	64	160	224
Mean	58.5	157.6	216.1
Standard Deviation	24.32	46.66	47.77

Child initiations ranged from 29 to 102 per 30 minutes and responses ranged from 101 to 266 per 30 minutes. Initiations made up an average of 27.47% of total child verbalisations (SD = 9.6%), with a minimum of 9.83% for Child 4 and a maximum of 44.93% for Child 1

T-tests revealed that the difference in the number of initiations spoken by teachers and children was not statistically significant, t (9) = 1.16, $p = .27$. The difference between the number of responses spoken by teachers and children approached statistical significance, t (9) = 2.22, $p = 0.053$, with teachers producing a slightly greater number of responses.

Utterances: Counts of Total Utterances and Mean Length of Utterance in Morphemes

Total utterance counts and their mean length in morphemes were calculated by SALT and are counted as 'communicative units'. As shown in Table 8, teacher utterances made up an average of 57.52% of the dyad's total utterances (*SD* = 6.37%).

Table 8: Total Utterances and Mean Length of Utterance in Morphemes for Teachers and Children

	Total Teacher Utterances	Total Child Utterances	Teacher Mean Length of Utterance	Child Mean Length of Utterance
Dyad 1	279	287	3.86	4.67
Dyad 2	356	175	5.16	4.64
Dyad 3	393	234	6.36	4.96
Dyad 4	461	317	4.10	3.20
Dyad 5	342	240	5.91	5.40
Dyad 6	183	215	6.61	5.91
Dyad 7	357	247	5.76	4.03
Dyad 8	318	207	5.31	3.45
Dyad 9	504	336	4.61	4.13
Dyad 10	289	261	4.76	4.71
Mean	348.20	251.90	5.24	4.51
Standard Deviation	91.70	49.90	0.92	0.83

Teacher 6 contributed the smallest total proportion of total utterances (46%). Teacher 2 spoke the largest proportion of utterances, contributing to 67% of total utterances in Dyad 2. The 10 teachers varied with respect to their total number of utterances which ranged from 183 to 504. Teachers' mean length of utterance (MLU) ranged from 3.86 morphemes to 6.61 morphemes.

The 10 children also varied with respect to the total number of utterances spoken. This ranged from 175 to 336 utterances per 30 minutes. Children showed similar variance to teachers on measures of MLU, ranging from 3.2 morphemes to 5.91 morphemes.

Paired t-tests revealed that teachers spoke an average of 96 more utterances per 30 minutes than children, t (9) = - 4.05, p = .003. The mean length of utterance used by teachers was also significantly greater than those used by children t (9) = 2.91, p = .017.

Words: Number of Total and Different Words

The total number of words and the number of different words were calculated using the SALT software. The mean total words produced by teachers was 1775.7 (*SD* = 455.63) with individual teacher results presented in Table 9.

Table 9: Number of Total and Different Words Spoken by Teachers and Children

	Teacher Total Number of Words	Child Total Number of Words	Teacher Number of Different Words	Child Number of Different Words
Dyad 1	1070	1074	342	275
Dyad 2	1827	633	445	181
Dyad 3	2459	976	495	253
Dyad 4	1882	759	399	273
Dyad 5	2003	1011	446	243
Dyad 6	1198	1024	284	257
Dyad 7	2017	801	401	245
Dyad 8	1673	569	381	189
Dyad 9	2279	1126	429	252
Dyad 10	1349	946	354	247
Mean	1775	891.9	397.6	241.5
Standard Deviation	455.63	190.56	60.78	31.73

Variation across teachers was apparent on both measures with a range of 1389 in total number of words and a range of 211 for number of different words. Of the total word

production for each dyad, teachers produced a mean of 65.93% of the total words (*SD* = 8.76%). This ranged from 49.91% of the dyad's total words spoken by Teacher 1 to 74.27% of the total words spoken by Teacher 2.

On average, children produced 891.9 words (*SD* = 190.56) per 30 minutes. Individual child results are presented in Table 9. The range in total number of words spoken by children was 556, and the range in number of different words spoken by children was 94. A Pearson correlational analysis revealed a positive correlation between the number of *total* words and number of *different* words spoken by children, $r(8) = .74$, $p = .015$, and by teachers, $r(8) = .89$, $p = .001$.

Paired t-tests revealed that teachers spoke a significantly higher total number of words than children (883.8 words), $t(9) = 5.55$, $p < .001$. Teachers also spoke significantly more different words than children (156.1 different words), $t(9) = 6.57$, $p < .001$.

Teachers' Use of Simple and Complex Verbalisations

Teachers produced a large range with respect to the frequency and variability identified in the outcome measures when their language sample was analysed using the MHRS. The verbalisations coded with the MRHS were divided into simple and complex verbalisations. Complex verbalisations included extensions, expansions, recast as a question, repetitions, and more cognitively challenging questions. Simple verbalisations were those coded as less cognitively challenging questions, statements, management utterances, affirmations, self-talk and non-linguistic utterances.

These types of verbalisations were explored individually to determine whether some of the complex techniques were used more frequently. As shown in Figure 3, teachers varied with respect to the numbers and types of complex verbalisations which they used. The total counts of complex verbalisations varied from 41 used by Teacher 1, to 113 used by Teacher 9 (*M* = 79.6, *SD* = 24.86).

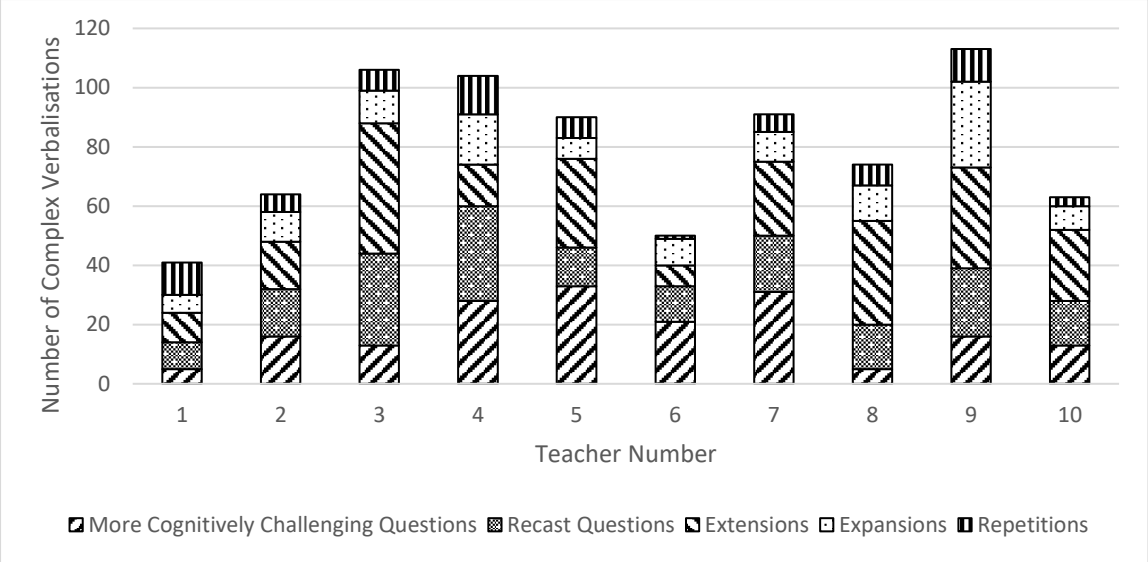

Figure 3: Distribution of Complex Verbalisations Used by Teachers

Extensions were the most frequently used complex verbalisation for five teachers (Teachers 1, 3, 8, 9, 10), followed by more cognitively challenging questions for three teachers (Teachers 5, 6, 7), and recast as a question for Teacher 4. Teacher 2 used equal numbers of these three types of complex verbalisations.

Simple teacher verbalisations ranged from 85 by Teacher 6 to 308 by Teacher 4 (M = 191, SD = 58.19). Statements and less cognitively challenging questions made up 91.56% of simple verbalisations (SD = 3.79%). Total verbalisations ranged from 135 by Teacher 6 to 412 by Teacher 4 (M = 270.6, SD = 76.09).

The proportion of simple and complex verbalisations in teacher talk is presented in Figure 4. Simple verbalisations made up the greatest proportion of total teacher verbalisations (M = 70.3%, SD = 6.18%). When compared to simple techniques, complex techniques contributed to less than one third of teacher verbalisations, with an average of 29.7% (SD = 6.18%).

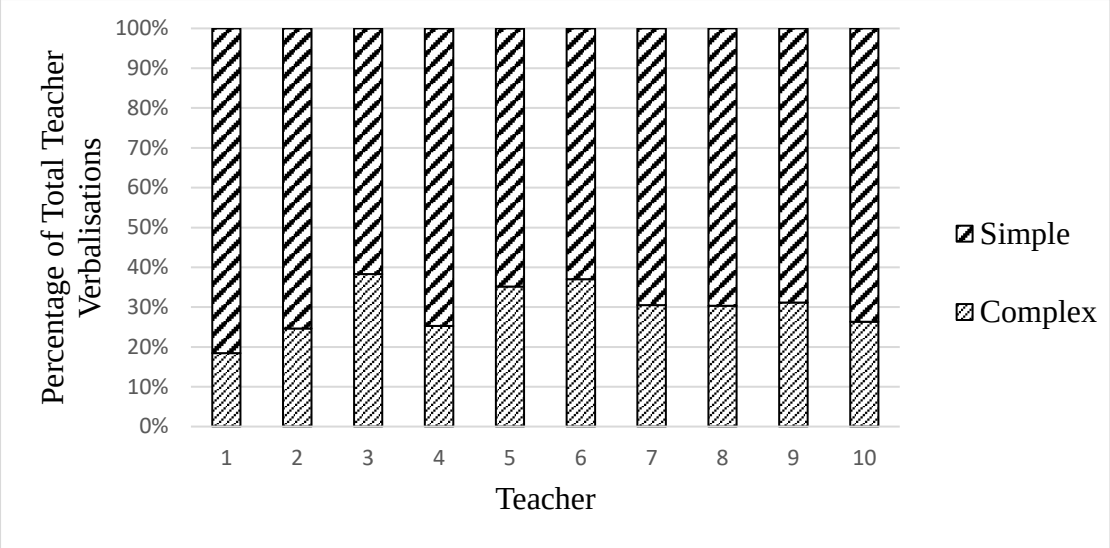

Figure 4: Simple and Complex Verbalisations as a Proportion of Total Teacher Talk

Children's Use of Simple and Complex Verbalisations

Children demonstrated a notable range with respect to the frequency and variability identified in the outcome measures when their language sample was analysed using the MHRS. The MRHS provided quality indicators of child verbalisations, as indicated by the frequency and complexity of the verbalisations. For the purposes of this analysis, the six MHRS verbalisation categories were collapsed into three categories. The complex verbalisation category included complex utterances and complex questions, the simple verbalisation category included simple utterances and simple questions, and the 'other' verbalisation category included the non-linguistic and behaviour codes.

Each category of verbalisations was further examined to determine its contribution to the total proportion of child verbalisations. The results of this analysis are presented in Figure 5. Children produced an average of 216.1 verbalisations in total (*SD* = 47.7). Complex verbalisations made up an average of 30.34% of total verbalisations (*SD* = 15.68%), and other verbalisations made up an average of 11.68% of child verbalisations (*SD* = 6.7%).

Simple verbalisations were the most frequently occurring type of verbalisation used by the children, with a mean of 127.9 (*SD* = 44.94) and a range of 137. There was less

variance within the number of complex verbalisations, (M = 61, SD = 23.12) and a range of 61.

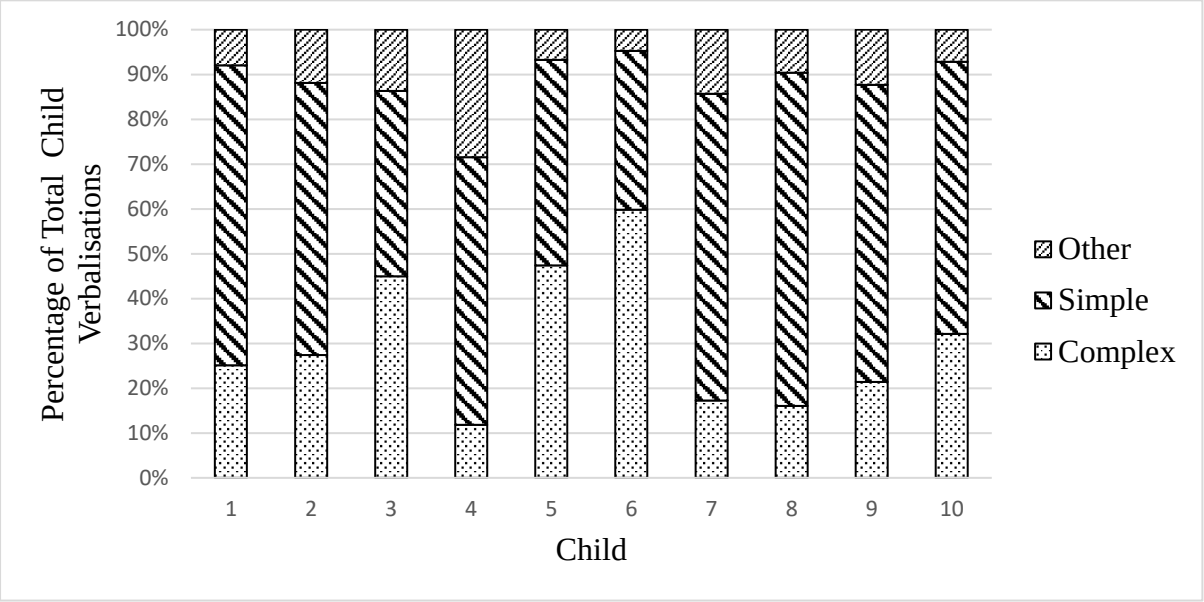

Figure 5: Simple, Complex, and Other Verbalisations as a Proportion of Total Child Talk

Correlations Between Aspects of Teacher Language and Child Language

To examine how aspects of teacher language and aspects of child language relate at a within-groups level and a between-groups level, Pearson correlation analyses were carried out using SPSS. Significance was set at $p<0.05$ (two-tailed).

Firstly, within-group correlations were studied for aspects of teacher talk. Teacher total utterances were significantly correlated with both teacher total words and teacher different words ($r(8)$ = .78, p = .007 and $r(8)$ = .70, p = .024). Complex teacher verbalisations were positively correlated with a longer mean length of utterance, $r(8)$ = .89, p = .001. Teachers' proportion of floor holding utterances was positively correlated with total number of different words, $r(8)$ = .74, p = .015. Teachers' years of experience working in early childhood was not correlated with either counts of complex and simple teacher verbalisations, nor with the proportion of overall complex and simple teacher verbalisations.

Secondly, within-group correlations were studied for aspects of child talk. Child total utterances was significantly correlated with child number of different words, but not with

child number of total words ($r(8) = .73$, $p = .017$ and $r(8) = .53$, $p = .119$). Children's mean length of utterance was positively correlated with complex verbalisations, $r(8) = .95$, $p < .001$, and negatively correlated with simple verbalisations, $r(8) = -.78$, $p = .007$, and other verbalisations, $r(8) = -.72$, $p = .020$.

Scores from the children's expressive vocabulary tests were not correlated with any measures of child talk on the MHRS. However there was a significant correlation between children's receptive vocabulary scores (excluding Child 5's incomplete score) and both (a) children's complex utterances ($r(7) = .76$, $p = .018$), and (b) mean length of utterance ($r(7) = .77$, $p = .015$).

Thirdly, between groups correlations were analysed using measures from both the MHRS and SALT. The first analysis involved the teacher-child measures from SALT. Teacher number of turns was *negatively* correlated with children's mean turn length, $r(8) = -.70$, $p = .024$, and children's mean utterance length, $r(8) = -.72$, $p = .018$. Teacher number of turns was also *positively* correlated with the number of utterances spoken by children, $r(8) = .82$, $p = .003$. Teacher number of utterances was positively correlated with the number of child turns, $r(8) = .84$, $p = .002$, and negatively correlated with child mean turn length and $r(8) = -.72$, $p = .018$. The final analysis from the SALT data revealed a negative correlation between teacher's mean turn length and the number of utterances spoken by children, $r(8) = -.65$, $p = .043$. Correlations between teacher total utterances and child number of total or different words, or between child total utterances and teacher number of total or different words, did not reach statistical significance. Teacher's years of experience did not correlate with any measures of child talk.

Lastly, correlations between teacher and child measures from both coding schemes were examined. Teacher's mean length of utterance was positively correlated with children's use of complex verbalisations, $r(8) = .72$, $p = .019$. Teacher total utterances was positively

correlated with children's production of 'other' verbalisations, $r(8) = .70$, $p = .025$. Teacher number of total words and number of different words were both negatively correlated with the proportion of total dyad talk spoken by children ($r(8) = -.78$, $p = .008$, and $r(8) = -.87$, $p = .001$). Finally, this analysis revealed a positive relationship between complexity of teacher and child talk. Complex talk from teachers was significantly correlated with complex talk from children, $r(8) = .63$, $p = .049$. Simple talk from teachers was significantly correlated with simple talk from children, $r(8) = .67$, $p = .035$. The only teacher verbalisation type which was significantly correlated with child verbalisation complexity was more cognitively challenging questions. There was a significant negative correlation between cognitively challenging questions and simple child talk, $r(8) = -.66$, $p = .037$.

Chapter 4

Discussion

Exposure to high quality language input is thought to be an important component of children's early language development. The purpose of the present study was to explore the frequency and quality of language interactions between teachers and four-year-olds during a standardised one-on-one play interaction in a preschool setting.

Protocol and Language Samples

The protocol developed for the present study was designed to create a standardised procedure which could be used with all participants to elicit a language sample that was representative of typical interactions in early childhood settings. Play was selected as the context as it has been widely used in previous research (Cabell et al., 2015; Dickinson et al., 2008; Girolametto & Weitzman, 2002; Justice, Mashburn, Pence, et al., 2008; Justice et al., 2013; Kontos, 1999; Massey, 2013; Wilcox-Herzog & Kontos, 1998) .

The sample length selected was consistent with previous studies which suggests that 20 to 30 minute recordings of teacher-child conversation provide a reasonably representative sample of typical behaviour (Dickinson et al., 2008; Justice, Mashburn, Hamre, & Pianta, 2008). In order to remove inter-task variance in the quality of language use, all teachers were given the same set of toy animals to use during the play, as in Justice, Mashburn, Hamre, et al. (2008). The researcher also provided the teachers with a recording device, so that they could collect the samples at times which were convenient for them. An advantage of this collection procedure is that the researcher is not required to be present during data collection and this minimises observer effects (LeCompte & Goetz, 1982). This protocol allowed for language samples to be gathered effectively, utilising an inexpensive, age appropriate method which could fit into the day-to-day activities of the service. The protocol was largely successful in generating a set of language samples suitable for analysis.

The samples gathered were assessed for key features of teacher and child talk. This was achieved using two coding methods; Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 1998) and a Modified Hart and Risley Scheme (MHRS; Hart & Risley, 1995). The SALT analysis allowed for linguistic analyses and provided measures related to the linguistic features of the interactions. The SALT software enabled the analysis of linguistic complexity and diversity via mean utterance length and number of different words. The codes from the MHRS allowed a functional analysis of both simple and complex verbalisations. The MHRS codes were able to differentiate between children's and teacher's use of simple and complex verbalisations. Given that the quantity of language input that a child receives does not provide an accurate picture of children's language environment, it is important to analyse both the quality as well as the quantity of talk in adult-child language interactions (Rowe, 2012).

The interaction excerpts in the results section provide different examples of teacher-child talk. Three of the examples highlight the complex verbalisation use from the teacher prompting complex verbalisations from the child. The last example shows a missed opportunity by the teacher to engage in a way which may sustain conversation and elicit complex verbalisations from the child.

Example 1 illustrates the type of interaction that can occur when teachers are interested in what the child has to say. In this case, the child expressed disagreement with something that the teacher said. The teacher utilised the opportunity to use a more cognitively challenging question and to prompt the child to think about and justify their response, thus encouraging metacognitive development (McInnes, Howard, Crowley, & Miles, 2013; Wilcox-Herzog & Kontos, 1998). This question successfully elicited a complex verbalisation from the child.

Example 2 demonstrates the teacher using complex verbalisations to teach the child a new word. The child is then is able to connect the word ‘camouflage’ to a similar word ‘invisible’ without the teacher’s prompting. In further interactions, the child appropriately uses the new word in a way which demonstrates understanding. The child has begun to embed the new word into their vocabulary network by associating it with a word they are already familiar with. This example also demonstrates another reason for looking at both quantity and quality of an interaction. If this was examined only at a quantity level, it may appear that the teacher is talking too much as there are many more teacher words (96) than child words (17), however the type of talk the teacher is engaged in allows the child to learn a new word.

Similar to the above examples, Example 3 provides an example of the teacher using a number of complex verbalisations which facilitates a multi-turn conversation with complex verbalisations used by both speakers. In this example, the teacher encouraged the child to think about and justify what they were saying. In this way, the teacher also modelled how the child may test their thinking and she introduced the word ‘hypothesis’ later in the interaction to further explain this concept.

Example 4 demonstrates a missed opportunity by the teacher to create an interaction similar to the examples described above. In this interaction, the teacher did not use any complex verbalisations, even following the child’s use of “I think…”. This would have been a good opportunity for the teacher to use a more cognitively challenging question and encourage the child to justify or think about their reasoning behind their statement. The teacher’s lack of acknowledgement of the child’s complex verbalisation is potentially the reason why there were no more attempts at using complex verbalisations by the child in the rest of the example.

Outcome Measures from SALT

Teachers in the present sample varied with respect to the quantity of talk they engaged in, as measured by the number of utterances, number of total words, and number of different words spoken. Teachers in the current study displayed similar mean rates of talk (11.6 utterances per minute) to those reported by Dickinson et al. (2008) (12.68 utterances per minute).

Hart and Risley (1995) reported that the children in their study received an average of 1440 words spoken to them by their parents each hour, ranging from 143 to 3618 words per hour. Tyler-Merrick (2003) reported that her 40 children heard an average of 995 words spoken to them by their ECE teacher per hour ranging from 551 to 1519 words per hour. In the current study, children had an average of 1775.7 words spoken to them per half hour period, ranging from 1070 to 2459. These studies highlight the variability that can occur with respect to early language exposure in the preschool years in different contexts.

Outcome measures from MHRS

Previous studies have recognised the range of functions served by teachers' language use. These range from simple, low level, or contextualised verbalisations which serve to manage or direct behaviour to complex, high level, or decontextualised verbalisations which encourage metalinguistic development. Consistent with previous studies e.g., (Cabell et al., 2015; Girard, Girolametto, Weitzman, & Greenberg, 2013; Justice et al., 2013; Kontos, 1999; Massey, 2004; Massey et al., 2008; Tompkins, Zucker, Justice, & Binici, 2013; Wilcox-Herzog & Kontos, 1998; Zucker, Justice, Piasta, & Kaderavek, 2010), teachers in the current study demonstrated substantial variability in the quality of their verbal interactions with four-year-olds in the present study. For example, teachers employed complex verbalisations in an average of 30% of their total verbalisations as coded by the MHRS, similar to the 36% reported by Turnbull, Anthony, Justice, and Bowles (2009). Teacher 4 used twice as many

complex verbalisations as Teacher 6 and three times as many total verbalisations. However, when looking at complex verbalisations as a proportion of total teacher talk, Teacher 4's 104 complex verbalisations made up 25.2% of their total talk, whereas Teacher 6's 50 complex verbalisations made up 37% of their total talk. This shows that quantity and quality can vary independently of each other.

One of the most commonly measured indicators of quality in verbal interactions is the use of questions. Questions have been reported to contribute to approximately 30% of teacher's total talk (Chen & Liang, 2017; De Rivera et al., 2005; Lee & Kinzie, 2012; Massey et al., 2008; Tompkins et al., 2013; Zucker et al., 2010). Results of the current study found that questions made up an average of 46.18% of teacher's total talk, however this varied from 32.88% to 64.56% of total teacher talk.

The complexity of teacher questions and the responses they elicit can be highly variable. Open-ended questions, referred to in the current study as 'more cognitively challenging questions' are known to elicit longer and more complex responses from children (De Rivera et al., 2005; Rowe, Leech, & Cabrera, 2017), whereas closed-questions often do not require the child to provide answers longer than one or two words. The Effective Provision of Pre-School Education (EPPE) is a large-scale longitudinal study in England which collected and analysed approximately 400 hours of observation in preschool settings (Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004). It was reported that only 5.5% of the 5,808 questions that early childhood teachers asked were classified as open-ended (Siraj-Blatchford & Manni, 2008). The current study produced comparable findings, with more cognitively challenging questions making up just 6.69% of total teacher verbalisations.

The quality of talk spoken by children was highly varied with respect to raw counts and proportions of complex, simple, and other verbalisations spoken. The children in the

present study displayed a range similar to that observed by Justice et al. (2013) in the number of complex verbalisations spoken. In the current study, children used between 30 and 91 complex verbalisations during the 30-minute sample, comparable to the range from 3 to 34 complex utterances during the 10-minute sample in Justice et al. (2013). Complex verbalisations made up an average of 30.34% of children's total verbalisations.

An increased number of verbalisations spoken by a child was not correlated with the raw counts or proportions of verbalisation type. For example, Child 4 spoke twice as many total verbalisations as Child 6. However, this was not reflected in the number of complex verbalisations spoken by each child. Child 4's 35 complex verbalisations made up 11.78% of their total verbalisations, whereas Child 6's 88 complex verbalisations made up 59.46% of their total verbalisations. Complex verbalisations allow children to practice new words and engage in multi-turn interactions with adults. This suggests that engaging in interactions which allow children the space to think about their responses may elicit more complex verbalisations and be more beneficial for children's language growth than exchanges that result in a large number of single word utterances.

Correlations between aspects of teacher talk and aspects of child talk

Significant relationships were evident both within and between aspects of teacher talk and child talk. As the number of utterances spoken by the teachers increased so did the number of total words, and different words, spoken. When considering child utterances however, only the number of different words but not the number of total words increased with total utterances. There was no significant relationship between the number of total words spoken and number of different words spoken by either speaker. This is likely because the relationship between the two is not linear, as the more an individual speaks, the more likely they are to repeat words (DeThorne, Deater-Deckard, Mahurin-Smith, Coletto, & Petrill,

2011). Complexity of verbalisations was characterised by utterance length for both teachers and children.

Some of the relationships which were expected did not emerge in the present study. For example, while existing research suggests that teachers with more years of experience working in ECE may have a greater understanding of children's development and may be more able to target their interactions at children's ability level (Pianta et al., 2005). Additionally, research suggests that teachers with specific training in ECE have higher quality interactions with children, as indicated by environmental rating scales (Fukkink & Lont, 2007). However, the present study found that teacher's years of experience was not related to any other aspect of teacher talk.

Child measures of expressive vocabulary were not correlated with any other measures of child talk. It is probable that this is due to the nature of the expressive vocabulary test, which measured the child's ability to recognise and name a specific set of pictures. However, children's measures of receptive vocabulary were positively correlated with children's use of complex verbalisations. Receptive language is related to comprehension which allows children to understand a greater number of words which they can use to form complex verbalisations.

In the present study, three interesting correlations between teacher talk and child talk occurred. First, there was a positive correlation between number of teacher and child utterances. This correlation was expected as it simply reflects the fact that the more one person spoke, the more the other person spoke. This is consistent with existing literature (Hart & Risley, 1992, 1995; Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991).

Second, there was a negative correlation between *number* of teacher utterances and *length* of child utterance. This correlation could mean either of two things. It could mean that the longer child utterances became, the less the teachers spoke, or it could mean that the more

the teachers talked, the shorter the child utterances became. However the direction of influence is not able to be determined. This is similar to findings reported by Dickinson and Porche (2011) who found that the less teachers talked, the more children talked. This finding was attributed to the observation that when teachers talked less, it was because their interactions with children were characterised by greater responsivity, so children had more opportunities to engage and extend their thinking rather than be a passive member of the interaction.

Finally, the proportion of simple and complex verbalisations by one speaker was positively correlated with the proportion of simple and complex verbalisations used by the other speaker. This has been observed in other studies, for example, Turnbull et al (2013) reported that the teacher's use of less complex questions was unlikely to prompt complex responses from children whereas more complex questions from teachers were likely to result in longer utterances from children. Exposure to complex verbalisations is more predictive of language development than the number of words a child is exposed to. Therefore, examining the ratio of adult to child speech may provide a more accurate description of the quality of interactions that teachers and children are engaging in (Dickinson & Porche, 2011). In order to get a more complete picture of the interactions between teachers and children it is important to assess the moment to moment aspects of these interactions (Girolametto, Weitzman, & Greenberg, 2012).

As mentioned earlier it is important to note that the directionality of the correlations identified in the current study cannot be ascertained as an experimental analysis was not within the scope of the current study. Justice et al. (2013) reported that conversation complexity in the preschool classroom was characterised by "patterns of sequential dependency" which "revealed a transactional interdependence in the complexity of teachers' and children's talk during conversations" (p.504). A bidirectional relationship exists in that it

is not only the language of the teacher influencing that of the child, but also the language of the child influencing that of the teacher. Children's language use is viewed as having an active influence on their development, as it guides the way teachers and other adults support their language development. This view is consistent with the view of Te Whāriki which views children as being 'active and contributing agents' in their development (Ministry of Education, 2017c) and further suggests that interactions which are characterised by responsivity of both the teacher and child are likely to facilitate language development. The individual ability of children to progress in their literacy and language skills is likely to be reflective of how their language input interacts with the language input of teachers (Johanson et al., 2016). Children's language experiences can therefore be considered as dependent upon the child rather than independent of the child (Sameroff & Mackenzie, 2003). Future studies should further examine the role that child characteristics have on classroom language environments.

Implications

Findings from the current study have several important implications. Firstly, the data show that all teachers are engaging in some interactions which are likely to support child language development. However, there was significant variation in the raw counts and proportion of complex teacher verbalisations. These findings are similar to previous research which has found that some teachers use effective teaching strategies relatively infrequently (Cunningham, Zibulsky, & Callahan, 2009; Hamre et al., 2012; Hindman & Wasik, 2008; Justice, Mashburn, Pence, et al., 2008). Interestingly, quantity and quality of teacher talk were not related to each other, however they were both related to aspects of child talk. This finding highlights the importance of utilising both quantity and quality measures when assessing language interactions between teachers and children. This importance is further demonstrated by the examples provided.

In addition, the content of the talk needs to be understood in order to provide an accurate interpretation of any quantitative data. This is because a long verbalisation can be supportive of child language growth but it can also take 'air time' away from the child. If verbalisations are not produced in a responsive interaction then the words may be like background noise to the child, having minimal impact on child language development (Hirsh-Pasek et al., 2015). Thus, it is essential for teachers to find a balance between the quantity and quality of their talk. However the research has not yet determined the appropriate balance that will best facilitate children's language skills (Cabell et al., 2011).

The present study observed significant variation in the quantity and quality of teacher talk. Given the homogeneity in the language ability of the participating children, the assessment protocol controlling for activity setting, and the absence of a significant relationship with teacher training or years of experience, it is tempting to attribute variance in teacher talk to to teacher personal style. However, there are several other possible reasons for the variation in the teachers' language use observed in the present study. Firstly, the literature suggests that ECE teachers are often unclear about their role when it comes to fostering children's language and literacy development (Hedges, 2003; McLachlan & Arrow, 2014). Secondly, ECE teachers have been found to have an insufficient understanding of language development and this impacts on their practice (Education Review Office, 2017), Thirdly, ECE teachers may not be aware of the importance of engaging in quality literacy and language interactions with children (Education Review Office, 2011). Fourthly, teachers may not have sufficient knowledge regarding how best to support children's literacy and language development. Teachers need to be able to adapt the techniques they are using for individual learners, and this requires teachers to have a "comprehensive and complex knowledge and skill base" (McLaughlin, Aspden, & Snyder, 2016, p. 190).

The present study builds on existing New Zealand research which has observed considerable variation in the way teachers interpret the curriculum (Education Review Office, 2007, 2011, 2013, 2017; McLachlan, 2018). The Education Review Office has suggested that this may be due in part, to the absence of explicit guidelines and expectations regarding curriculum implementation and assessment. A recent report recommended that the "Ministry of Education develops a more coherent and systematic set of curriculum expectations, assessment tools and resources for oral language in the early years" (Education Review Office, 2017, p. 5). While this ERO report was being published, the Ministry of Education was in the process of publishing the updated version of Te Whāriki (Ministry of Education, 2017c).

The current study did not assess the extent to which ECE centres were implementing the updated curriculum or teacher's perspectives and understanding of their role in facilitating children's language development. Some ECE researchers have argued that systematic teaching is not appropriate in the ECE setting, e.g. Cherrington and McLaughlin (2017) and Siraj-Blatchford (2009). However this position may begin to shift with the updated curriculum, as Te Whāriki now views Kaiako (adults) as the key resource in ECE, with their primary responsibility being the "facilitation of children's development through thoughtful and intentional pedagogy" (Ministry of Education, 2017c, p. 59). A report published in November 2018 by the Education Review Office found that less than 50% of the services in their study had begun to implement the updated curriculum. In light of this report, and the current study, it would be appropriate to begin providing ECE teachers with a clearer outline regarding the importance of the role teachers play in children's early language development.

The updated version of Te Whāriki provides a changed view of assessment, regarding it as a way of making 'valued learning' visible, where 'valued learning' is defined by 20 ECE learning outcomes (Ministry of Education, 2017c). Similarly, the importance of gathering

assessment data over time has been recognised, so that Kaiko are able "track changes in children's capabilities, consider possible pathways for learning, and plan to support these" (Ministry of Education, 2017c, p. 63). The protocol developed for the current study proved to be largely successful in eliciting language samples which could be analysed for key aspects of both children's and teacher's talk

In order for progress over time to be assessed, both spontaneous and planned assessments need to be utilised. Such an approach would require centres to develop a system through which they can gather, store and reflect on data to guide curriculum planning in the short, medium, and long term. The current study provides a useful protocol within which assessment data could be collected. First, the protocol can be used to collect language information of both teachers and children. Secondly, there is scope to gather more specific information from the Systematic Analyses of Language Transcripts software (Miller, 1981), depending on the focus of the assessment. Thirdly, the protocol could be used at different time points to assess development in both child outcomes and teacher practice. For example, the Modified Hart and Risley Scheme (MHRS) may be best utilised when assessing change in teachers' use of simple or complex verbalisations. However, due to the nature of the coding scheme, the MHRS is unlikely to capture the more nuanced linguistic aspects of the child's language. Instead, linguistic aspects would be assessed via measures such as the mean length of utterance (MLU) in the SALT software. MLU is known to be a measure of syntactic complexity in children, as it increases with the acquisition of more advanced syntactic forms (Blake, Quartaro, & Onorati, 1993). This measure would allow for children's syntactic development to be tracked during a period in which significant development is expected to occur (Paul, 2000). MLU is less useful however when assessing adult speech, as once it is over the level of 4.0 suggested by Brown (1973) MLU is no longer thought to be an accurate

measure of complexity as it is no longer measuring the syntactic capacity of the individual (Parker & Brorson, 2005).

Limitations

The present study, like all small-scale studies, has several limitations. Firstly, the present study has utilised the protocol and coding schemes during a single activity context only. It is important to note that teacher talk during a one-on-one interaction with a child differs from group interactions. Additionally, the sample in the current study consisted of typically developing children from a restricted age bracket. Different results may be observed when different samples are studied. Secondly, the small sample size places limitations on the generalisability of the study. A third limitation in the current study is that, although the teachers were asked to select children at random, this may not have occurred. All children who were selected presented as having above average language, thus it appears that teachers may have selected children they knew to have strong language skills. In future studies the researcher may need to supervise the selection process or select the children through another process. A fourth limitation is the fact that teachers were aware that the focus of the study was on the 'frequency and quality of language interactions'. It is probable that this will have influenced their performance to some extent, as research participants are susceptible to social desirability bias. This bias may mean that teachers performed in a way they believed would be viewed more positively by the researcher. Following this, findings may be interpreted with the view that teachers were performing at their best during data collection.

Conclusion

The current study collected and analysed samples of language interactions between ECE teachers and four-year-old children in New Zealand. Although directionality could not be ascertained in the current study, results illustrated a positive relationship between the proportion of complex verbalisations used by teachers and those used by the children. Given

that there was not a significant relationship between raw counts of teacher and child complex verbalisations, this suggests that simply increasing teacher total talk is not the solution for increasing the quality of children's language environments. Increasing the quality of teacher-child interactions may be more likely to have positive impacts on children's langauge development. ECE teachers need to be aware of the significant role they play in children's development and how they can use their words to provide children with a foundation on which to build their future vocabulary. The variation in outcome measures present in the current study suggests that there is room for further developing ECE teacher's knowledge and awareness about how to support children's language development. ECE teachers should be empowered to maximise the opportunities presented by Te Whāriki to provide all New Zealand children with the chance for a quality early childhood experience that will facilitate their language development and hence allow them to achieve their full potential.

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Appendix 1: Initial Ethics Approval

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson
Telephone: +64 03 369 4588, Extn 94588
Email: human-ethics@canterbury.ac.nz

Ref: 2017/22/ERHEC

26 May 2017

Ella Grigg
School of Health Sciences
UNIVERSITY OF CANTERBURY

Dear Ella

Thank you for providing the revised documents in support of your application to the Educational Research Human Ethics Committee. I am very pleased to inform you that your research proposal **"**The Frequency and Quality of Language Use By Home-Based and Centre Based Early Childhood Educators During a Shared Play Activity" has been granted ethical approval.

Please note that this approval is subject to the incorporation of the amendments you have provided in your emails of 2nd and 19th May 2017.

Should circumstances relevant to this current application change you are required to reapply for ethical approval.

If you have any questions regarding this approval, please let me know.

We wish you well for your research.

R. Robinson

Yours sincerely *pp*

Dr Patrick Shepherd
Chair Educational Research Human Ethics Committee

Please note that ethical approval relates only to the ethical elements of the relationship between the researcher, research participants and other stakeholders. The granting of approval by the Educational Research Human Ethics Committee should not be interpreted as comment on the methodology, legality, value or any other matters relating to this research.

Appendix 2: Amended Ethics Approval

HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson
Telephone: +64 03 369 4588, Extn 94588
Email: human-ethics@canterbury.ac.nz

Ref: 2017/22/ERHEC Amendment 1

28 September 2017

Ella Grigg
School of Health Sciences
UNIVERSITY OF CANTERBURY

Dear Ella

Thank you for your request for an amendment to your research proposal "The Frequency and Quality of Language Use By Home-Based and Centre-Based Early Childhood Educators During a Shared Play Activity" as outlined in your email dated 28th September 2017. I am pleased to advise that this amendment has been considered and approved by the Educational Research Human Ethics Committee.

Please note that should circumstances relevant to this current application change you are required to reapply for ethical approval.

If you have any questions regarding this approval, please advise.

We wish you well for your continuing research.

Yours sincerely

R. Robinson

pp

Dr Patrick Shepherd
Chair Educational Research Human Ethics Committee

Please note that ethical approval relates only to the ethical elements of the relationship between the researcher, research participants and other stakeholders. The granting of approval by the Educational Research Human Ethics Committee should not be interpreted as comment on the methodology, legality, value or any other matters relating to this research.

Appendix 3: Organisation Information Form

School of Health Sciences

Email: ella.grigg@pg.canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

The frequency and quality of language use by centre-based early childhood teachers during a shared play activity

Information Sheet for Organisations

Dear

My name is Ella Grigg and I am carrying out a thesis project for my Master of Arts degree in Child and Family Psychology. My project will investigate the frequency and quality of language provided by teachers in centre-based early childcare settings during a shared play activity between a teacher and a participating child who will be four years old, plus or minus two months.

I am seeking permission for my project to be undertaken in your organisation.

The following will be requested of 10 of your teachers:

1. To identify the four-year-old children who fit my project criteria.
2. To provide a quiet space for me to undertake two 15-minute word assessments with this participating child.
3. To participate in three, video recorded, 10-minute play sessions with the participating child between morning tea and lunch time with a provided age appropriate play activity.
4. Assist with obtaining parental consent from all parents. This is needed as non-participating children may be present during the play activity, and thus recorded. No information will be taken on these children.

The following will be requested of the 10 participating children:

1. To provide assent to participate in the project
2. Engage in three, 10-minute play activity with the participating teacher
3. At the beginning of the project, undertake two word assessments that will take 15 minutes each.

Participation in this study is voluntary, you may withdraw at any stage without penalty. In this instance, I will do my best to remove any information relating to the relevant parties, provided this should remain practically achievable

Results will be reported as part of my Master's thesis. The thesis will be made publicly available through the University of Canterbury library. Results may also be published in a journal article, or in presentations, or at conferences. You may be assured of the complete confidentiality of data gathered in this investigation: your identity will not be made public. I will take care to ensure the anonymity of all participants in publications of the findings. The children and teachers will be given code names and your organisation will not be identified. Anonymity cannot be guaranteed as other teachers or children may notice they are in the study. This is mitigated by ensuring confidentiality of the data.

Access to collected data will be restricted to myself and my two supervisors. During the study, all information will be kept in a locked office or in password protected electronic form. Following the study, all data will be digitized and securely stored in my senior supervisor's password protected UC computer for five years. It will then be destroyed.

Participation in this study may involve some psychological risk to the participating child as he/she may get anxious when completing the two vocabulary tests. To mitigate this there will be a two day gap between the tests to minimise anxiety and fatigue effects and practise questions for each test will be provided before each of the tests. There will be no pressure to complete the tests if they do not want to. Similarly, the teacher may become anxious when being video recorded during the play activity, but I will spend time with them until they are comfortable with being videoed with the small camera. They will be asked to 'just play like they normally do'.

Please indicate on the consent form if you would like a copy of the summary of results of the project. If you have any questions or concerns, please feel free to contact me on (xxx) xxx xxxx or by email at ella.grigg@pg.canterbury.ac.nz. You can also contact my senior supervisor, Dr Anne van Bysterveldt, by email at anne.vanbysterveldt@canterbury.ac.nz.

This project has received ethical approval from the University of Canterbury Educational Research Human Ethics Committee, and that participants should address any complaints to The Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you understand this information and wish to proceed with my project, please complete the consent form and return it to me via the postage paid envelope provided, or you can contact me and I will come and collect it by (date to be decided).
Thank you.

Kind regards,

Ella Grigg

Appendix 4: Organisation Consent Form

School of Health Sciences
Email: **ella.grigg@pg.canterbury.ac.nz**

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

The frequency and quality of language use by centre-based early childhood teachers during a shared play activity

Consent Form for Organisations

- ☐ A full explanation of this project has been provided and I have been given an opportunity to ask questions.
- ☐ I understand what is required if I agree to take part in the research
- ☐ I understand that participation is voluntary, and I may withdraw at any stage without penalty. I understand withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.
- ☐ I understand that any information or opinions that I or my teachers provide will be kept confidential to the researcher and her two supervisors, and that any published or reported results will not identify children, teachers, or this organisation.
- ☐ I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form at the University of Canterbury and will be destroyed after five years.
- ☐ I understand the risks associated with taking part and how they will be managed.
- ☐ I understand that I am able to receive a report on the findings of the study. If I want these emailed to me, I will provide my email address below.
- ☐ I understand that I can contact the researcher Ella Grigg or her senior supervisor, Dr Anne van Bysterveldt for further information.
- ☐ I understand that if I have any complaints I can address these to the Chair of the University of Canterbury Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch or human-ethics@canterbury.ac.nz.

By signing below, I agree to participate in this research project.

Name:_____ Date:_____

Signature:_____ Email:_____

Please return this form to the researcher using the prepaid envelope provided or you can contact the researcher and she will come and collect it by (date to be confirmed)

Appendix 5: Teacher Information Form

School of Health Sciences

Email: ella.grigg@pg.canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

The frequency and quality of language use by centre-childhood teachers during a shared play activity

Information Sheet for Teachers

Dear

My name is Ella Grigg and I am carrying out a thesis project for my Master of Arts degree in Child and Family Psychology. My project will investigate the frequency and quality of language provided by teachers in centre-based early childcare settings during a shared play activity between a teacher and a participating child who will be four years old, plus or minus two months.

I would like to invite you to participate in my project. My project involves you participating in three, 10-minute shared play activities with a participating child in your home/centre. The play periods will be recorded using a small video camera. I will provide the toys for the play activity.

The following will be requested of you:

1. At a time nominated by you, identify any children who fit the following criteria to be part of my project. They must be aged between 3 years 10 months to 4 years two months, with typically developing language skills, speak English as a first language and be in the centre/home at least three days a week. I have a procedure where one child will be selected to be the participating child.
2. Assist with distributing information sheets and obtaining parental consent of the participating child and all the other children. This will consist of distributing and collecting consent forms over the course of one week, I will help you with this task.
3. At a time nominated by you, complete a ten-item questionnaire about your work in early childhood education; this should take no more than 5 minutes to complete.
4. Provide a quiet area where I can undertake two vocabulary tests with the participating child. These take approximately 15 minutes each to complete.
5. With a small video recorder, record yourself and the participating child during a shared play activity between morning tea and lunch times for three, 10-minute sessions.
6. I will meet with you to show you how to use the recording device and provide the toys for the play activity. This can be done at a time selected by you and will take up to 20 minutes, depending on how comfortable you feel operating the recording device.
7. During the play activity, just carry on as you normally do, if other children wish to join the activity then they are welcome to.

8. After each play activity, I will come and download the video recording and give you the video recorder for the next session.

Participation in this study is voluntary; you can withdraw at any stage without penalty. In this instance, I will do my best to remove any information relating to you, provided this should remain practically achievable.

Results will be reported as part of my Master's thesis. The thesis will be made publicly available through the University of Canterbury library. Results may also be published in a journal article, or used in presentations, or at conferences. You may be assured of the complete confidentiality of data gathered in this investigation: your identity will not be made public. I will take care to ensure the anonymity of all participants in publications of the findings. The children and teachers will be given code names and your organisation will not be identified. Anonymity cannot be guaranteed as other teachers or children may notice they are in the study. This is mitigated by ensuring confidentiality of the data.

Access to collected data will be restricted to myself and my two supervisors. During the study, all information will be kept in a locked office or in password protected electronic form. Following the study, all data will be digitized and securely stored in my senior supervisor's password protected UC computer for five years. It will then be destroyed.

Participation in this study may involve some psychological risk to the participating child as he/she may get anxious when completing the two vocabulary tests. To mitigate this there will be a two day gap between the tests to minimise anxiety and fatigue effects and practise questions for each test will be provided before each of the tests. There will be no pressure to complete the tests if they do not want to. Similarly, you may become anxious when being the video recorded. I will spend time with you practising until you feel comfortable.

Please indicate on the consent form if you would like a copy of the summary of results of the project.

If you have any questions or concerns, please feel free to contact me on (xxx) xxx xxxx or by email at ella.grigg@pg.canterbury.ac.nz. You can also contact my senior supervisor, Dr Anne van Bysterveldt, by email at anne.vanbysterveldt@canterbury.ac.nz.

This project has received ethical approval from the University of Canterbury Educational Research Human Ethics Committee, and that participants should address any complaints to The Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you understand this information and wish to proceed with my project, please contact me once you have completed the consent form and questionnaire, and I will come and collect them from you.

Thank you.

Kind regards,

Ella Grigg

Appendix 6: Teacher Consent Form

School of Health Sciences

Email: ella.grigg@pg.canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

The frequency and quality of language use by centre-based early childhood teachers during a shared play activity

Consent Form for Teachers

- ☐ A full explanation of this project has been provided and I have been given an opportunity to ask questions.
- ☐ I understand what is required of me if I agree to take part in the research.
- ☐ I am happy to use the video camera to take three ten-minute recordings of myself playing with the provided toys together with a participating child.
- ☐ I am happy to complete the questionnaire provided by the researcher
- ☐ I understand that my participation is voluntary, and I may withdraw at any stage without penalty. I understand that withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.
- ☐ I understand that any information or opinions I provide will be kept confidential to the researcher and her two supervisors, and that any published or reported results will not identify me, any children, teachers, or the setting.
- ☐ I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form at the University of Canterbury and will be destroyed after five years.
- ☐ I understand the risks associated with taking part and how they will be managed.
- ☐ I understand that I am able to receive a report on the findings of the study. If I want these emailed to me, I will provide my email address below.
- ☐ I understand that I can contact the researcher Ella Grigg or her senior supervisor, Dr Anne van Bysterveldt for further information.
- ☐ I understand that if I have any complaints I can address these to the Chair of the University of Canterbury Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch or human-ethics@canterbury.ac.nz.

By signing below, I agree to participate in this research project.

Name:_____ Date:_____

Signature:_____ Email: _____

Please contact Ella once you have completed this form and the teacher questionnaire and she will come and collect them.

Appendix 7: Teacher Questionnaire

School of Health Sciences

Email: ella.grigg@pg.canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

The frequency and quality of language use by centre-based early childhood teachers during a shared play activity

Teacher Questionnaire

Name: _____ Name of ECE setting: _____

Question One:
What is your highest qualification?

Question Two:
How long have you worked in ECE?

Question Three:
How long have you worked in your current job?

Question Four:
Are you a parent? If so, please provide age/s of your child/children?

Question Five:
What is the nearest primary school to your workplace?

Question Six:

Including you, how many teachers are in your workplace?

Question Seven:
How many children are in your workplace?

Question Eight:
Name the teaching supports you receive from your organisation

Question Nine:
Name the professional development courses/presentations you have undertaken in the past year

Question Ten:
Please indicate which cultural or ethnic group with which you identify. You may select more than one option.

- New Zealand Māori
- New Zealand European
- Cook Island Māori
- Samoan
- Chinese
- Indian
- Tongan
- Other (Please state):

Thank you for taking the time to complete this questionnaire. Your participation is greatly appreciated. Please return this questionnaire to the researcher with your completed consent form.

Appendix 8: Parent Information Form

School of Health Sciences

Email: ella.grigg@pg.canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

The frequency and quality of language use by centre-based early childhood teachers during a shared play activity

Information Sheet for the Parent/Caregiver(s) of the Participating Child

Dear

My name is Ella Grigg and I am carrying out a thesis project for my Master of Arts degree in Child and Family Psychology. My project will investigate the frequency and quality of language provided by teachers in centre-based early childhood education settings during a shared play activity between a teacher and a participating child who will be four years old, plus or minus two months.

The teacher in your child's early childhood centre has agreed to take part in my project. Your child has been randomly selected to participate in my thesis project. This will involve:

1. Your child playing with their teacher in three, 10-minute shared play activities. The play activity involves small plastic animals where the teacher and your child can make up any play activity they wish with these animals. The play activity will be recorded using a small video camera. Other children may join this if they wish.
2. Undertake two, 15-minute, vocabulary assessments in a quiet space at their centre using the Peabody Picture Vocabulary Test (PPVT) which measures receptive vocabulary and The Expressive One Word Vocabulary Test (EOWVT) which measures expressive vocabulary. If you wish, you can be provided with the results of these two assessments.

Your child may feel anxious undertaking these assessments. To minimise this, I will go through some practise questions with your child before the test. These tests usually take about 15 minutes each to administer, but I will take as long as your child needs. If I notice your child is becoming anxious or they tell me that they don't want to continue I will immediately stop the assessment and return your child to their teacher. I will ensure they are happy to return to their play activities in the centre.

Participation in this study is voluntary and you may withdraw your child at any stage without penalty. In this instance, I will do my best to remove any information relating to your child, provided this should remain practically achievable

Results will be reported as part of my Master's thesis. The thesis will be made publicly available through the University of Canterbury library. Results may also be published as a journal article or in presentations, or at conferences. You may be assured of the complete confidentiality of data gathered in this investigation: your identity will not be made public. I will take care to ensure the anonymity of all participants in publications of the findings. The children and teachers will be given code names and your organisation will not be identified. Anonymity cannot be guaranteed as other teachers or children may notice they are in the study. This is mitigated by ensuring confidentiality of the data.

Access to collected data will be restricted to myself and my two supervisors. During the study, all information will be kept in a locked office or in password protected electronic form. Following the study, all data will be digitized and securely stored in my senior supervisor's password protected UC computer for five years. It will then be destroyed.

If you have any questions, please feel free to contact me on (xxx) xxx xxxx or by email at ella.grigg@pg.canterbury.ac.nz. You can also contact my senior supervisor, Dr Anne van Bysterveldt, by email at anne.vanbysterveldt@canterbury.ac.nz.

This project has received ethical approval from the University of Canterbury Educational Research Human Ethics Committee, and that participants should address any complaints to The Chair, Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

I have included an information sheet and an assent form for you to go through with your child to make sure they are happy to be a part of my study.

If you understand this information and wish to proceed with my project, please complete the consent form and return with the child assent form it to your child's teacher by the end of the week.

Thank you.

Kind regards,

Ella Grigg

Appendix 9: Parent Consent Form

School of Health Sciences
Email: **ella.grigg@pg.canterbury.ac.nz**

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

The frequency and quality of language use by centre-based early childhood teachers during a shared play activity

Consent Form for the Parent/Caregiver(s) of the Participating Child

- ☐ A full explanation of this project has been provided and I have been given an opportunity to ask questions.
- ☐ I have read and explained the participating child information sheet to my child and have gone through the assent form with them.
- ☐ I understand what is required of my child if I agree to take part in the research. I am happy for my child to be video recorded interacting with his/her teacher during three, 10-minute shared play activities.
- ☐ I understand that my child will complete the Peabody Picture Vocabulary Test and the Expressive Vocabulary Test with the researcher in a quiet place in their centre.
- ☐ I understand that I can receive a report on the findings of the study, and copies of my child's vocabulary test scores. If I want these emailed to me, I will provide my email address below.
- ☐ I understand that my child's participation is voluntary, and they may withdraw at any stage without penalty. I understand that withdrawal of participation will also include the withdrawal of any information I have provided should this remain practically achievable.
- ☐ I understand that any information or opinions I provide will be kept confidential to the researcher and her two supervisors, and that any published or reported results will not identify my child, their teachers, or the setting.
- ☐ I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form at the University of Canterbury and will be destroyed after five years.
- ☐ I understand the risks associated with taking part and how they will be managed.
- ☐ I understand that I can contact the researcher Ella Grigg or her senior supervisor, Dr Anne van Bysterveldt for further information.
- ☐ I understand that if I have any complaints I can address these to the Chair of the University of Canterbury Educational Research Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch or human-ethics@canterbury.ac.nz.

By signing below I agree to for my child to participate in this research project.

Name:_____ Date:_____

Signature: Email:

Please return this form and the child assent form to the teacher by the end of the week.

Appendix 10: Child Information Form

School of Health Sciences

Email: **ella.grigg@pg.canterbury.ac.nz**

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

The frequency and quality of language use by centre-based early childhood teachers during a shared play activity

Information Sheet for the Participating Child

(For parent/caregiver to read to the child)

Ella is doing a project at the university. She wants you to help her by:

1. Helping her with two word tests. This means you get to look at pictures and tell Ella what they are, and you get to point to pictures when Ella says their names. This will be done in a quiet space at the centre so that you can concentrate. Ella will go through some practise questions before you start, so you know what to do. If you forget you can always ask her. You can take as much time as you need. Ella will do the tests on different days so you don't get too tired.
2. If you feel nervous or scared you can tell Ella and stop the test.
3. (teacher name) will also play some animal games with you. This is so Ella can see how well you and (teacher name) talk to each other while you are playing. When you are doing this, there will be a small video camera recording what you and your (teacher's name) say and do. Ella will keep this locked away in a safe cupboard where no one else can see it.

If you have any questions you can ask your Mum/Dad/Caregiver (as appropriate) or (teacher name). If you change your mind about being in the project, that's fine too. All you need to do is tell your Mum/Dad/Caregiver (as appropriate).

Ella's project will be published at the University but you will be given a secret code-name so that no one will know your real name. We will give (teacher name) a secret name too so that no one knows who they are either.

If you want to be part of my project, then let your Mum/Dad/Caregiver know.

Ella ☺

Appendix 11: Child Assent Form

School of Health Sciences
Email: **ella.grigg@pg.canterbury.ac.nz**

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

The frequency and quality of language use by centre-based early childhood teachers during a shared play activity

Participating Child Assent Form

(For parent/caregiver to read to the child)

I know that:

- ☐ I have been asked to assist Ella with her research project
- ☐ Ella will come to see me at my centre and do two word tests with me
- ☐ (Teacher name) will use a small video and record us playing together with some toy animals
- ☐ When Ella writes her project, I will be given a secret code name so no one will know who I am
- ☐ If I do not want to help or I change my mind about helping with Ella's project, I can tell my Mum/Dad/Caregiver or (teacher name) and no one will get cross
- ☐ If I have any questions I can ask my Mum/Dad/Caregiver or (teacher name) or Ella
- ☐ My Mum/Dad/Caregiver will get a report from Ella when her project is finished

My Mum/Dad/Caregiver has read to me what is required to be in Ella's project and I understand what is required. I agree to help Ella with her project.

My name: _____

Full name: _____

Parent/Guardian: _____

Date: _____

Please return this form with your parent consent form to the teacher by (date to be confirmed)

Appendix 12: MHRS Coding Scheme

Adult Codes

Code	Definition	Example(s)
Less Cognitively Challenging Question (LCC)	Questions about information that is *perceptually available* or that offer concrete choices	• Closed ended questions • Which way do you want me to put them? • What is this called?
More Cognitively Challenging Question (MCC)	Questions about non-present objects or past or future events or that requires the child to draw an inference, analyse information, discuss vocabulary or make a prediction	• Why do you think that? • What are they fighting about? Where are you going to go? • What did we learn about planes? • What else could they do? • Where do you think…
Recasting as a question (RQ)	Repeating the child's utterance back to them as a question (noted by inflection of tone)	• C: Now I'm gonna make it even longer, T: You're gonna make it even longer?
Repetition (R)	Directly repeating a child's utterance (word for word)	• C: A Cat!, T: A Cat!
Extension (EXT)	Repeating the child's utterance and adding new information OR adding new information in the form of facts or new words	• C: It's so close, E: They are close together • C: Polar bears, E: Two polar bears • T: What are these called, C: Horns, T: Or *Antlers* • T: Do you know what that is, C: No, T: It's a *Joey*
Expansion (EXP)	Repeating the child's utterance but altering it slightly if a correction is needed	• C: Zebra, T: A Zebra • C: Camel, T: The camels, right
Non-Linguistic (NL)	Utterances with no linguistic function	• Mumbling • Laughter • Strange noises • Animal noises

Self-Talk (ST)	Describing their own behaviour while playing with the child	• Teacher pretending to be two animals talking to each other
Statement (S)	Turns which do not add content to the conversation or encourage the child to elicit conversation	• We didn't find him • He's not here today
Affirmation (A)	Explicit praise or approval	• That's very kind of you • I like how you're thinking of lots of different ways to use these
Management (M)	Managerial or directive statements that aim to direct or instruct the child's behaviour	• Put that over there • Can you cone and play with them over here

Child Codes

Code	Definition	Example(s)
Simple Verbalisation (SV)	Absence of complex verb phrases or sophisticated vocabulary	• Labelling • That one • Yup

Complex Verbalisation (CV)	Turns which include complex verb elements or linguistic complexities
	
	Auxiliary verb + verb
	Multiple verb elements
	Sophisticated words
	
	Predicting – he might be in there
	
	They are *starting* to *go* in
		• Complex verb phrases
		• Words like
		  ○ Because or cause
		  ○ Maybe
		  ○ I think
		  ○ Perhaps
		  ○ Already
		  ○ Although
		  ○ Actually
		  ○ pretend
		• Complex/novel words
		  ○ Elevator
		  ○ Habitat
		  ○ Palaeontologist
		
		  ○ You put them all up and lie the others down
		  ○ Cause they're all too there

		○ Tomorrow I'm going to be here ○ I think I'll eat rice ○ And there's going to be … ○ Cause they're leaving ○ He's going to bring it to ...
Simple Question (SQ)	Closed-ended questions	• Can I give them to you? • Is there something in there
Complex Question (CQ)	Open-ended questions	• 'Why do they keep falling?'
Non-linguistic (NL)	Utterances with no linguistic function	• Mumbling • Laughing • Strange noises • Animal noises
Behaviour (B)	Indicated by (), refer to actions of the child – not included in analysis	• (nods) • (shakes head)